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Those who look longingly at the top of the ladder will at least make the ascent of some rounds. But in the plumbing and heating business that advancement may come only when good materials are used and good work done. Trouble stalks behind Poor Work, and will soon tap you on the shoulder. Install none but advertised, branded goods, behind whose satisfactory operation the maker stands ready to "make good."

A Chance for Inspectors of Plumbing to do Something Great

It is time that plumbing goods should be improved by adopting a standard of quality of material and weight. There is a vast amount of stuff manufactured and sold to the public at a good price for an inferior article. The public should be protected against the avaricious and unscrupulous makers of these goods, the man who wholesales them, and the man who installs them. This can best be done by adopting a uniform standard of weight, shape, material or gauge, and this is a work which properly belongs to the American Society of Inspectors of Plumbing and Sanitary Engineers, working with the assistance of the manufacturers' committee on standards.

* * *

After determining a standard and making efforts to have this standard adopted by the various city councils for insertion in plumbing codes, the plumbing inspector could be relied upon to see that the requirements are carried out, thus protecting the property holder who pays for the material and must depend on some one to protect his interest.

What has caused the United States Congress to pass the pure food law, and require such rigid inspection? Simply because unscrupulous manufacturers were selling food stuffs not fit to be taken into the human system. It might be asked what similarity plumbing has to the pure food law? Simply this: The government is endeavoring to protect the users of food stuff and ensure that what they pay for is wholesome food, and that they are not being robbed by the sale of impure or unwholesome food.

* * *

In regard to plumbing the average layman knows little or nothing except in a general way. Especially is he ignorant as to construction and material and must leave these vital points to those who are familiar with such work, and he must depend on a modern plumbing code and a competent inspector of plumbing to see that the comfort of his family is not jeopardized by having defective plumbing, pipe, fixtures or construction placed in his home.

* * *

How many tissue paper nickel-plated brass traps and waste pipes are sold and used each year? Upon them it is impossible to run a thread without cutting nearly through the pipe, which may hold together for awhile, but will open up gradually when settlement occurs and allow leakage of water and sewer air.

* * *

How many slip joints are not gas tight? How many cast iron fittings and pieces of pipe are annually sold

Concluded on page 148

Roughing-In Stacks and Branches

II*

EDITED BY JNO. K. ALLEN

Mem. Am. Soc. Inspectors of Plumbing and Sanitary Engineers; Mem. Royal Sanitary Institute of Great Britain; Assoc. Mem. Am. Soc. Heating and Ventilating Engineers; Hon. Mem. Chicago Architectural Club.

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LOCATION OF SOIL, WASTE AND VENT STACKS.

In the southern part of the United States, where the winter weather is mild and there is no danger from frost, the soil, waste and vent stacks, together with the branch connections to fixtures, are located on the outside of many buildings, and only short connections of pipe extended through the walls of the building to the several fixtures. By locating the stacks and branches on the outside of the building much space is sometimes saved inside of the houses, and in case of a leak in the pipes no possible harm

This explains the location and construction of soil, waste and vent stacks

can result. On the other hand, an exposure to the heat of the sun outside does not benefit the lead-calked joints, to say the least, and, at the best, the pipes are not an ornament to a building. In the larger and newer buildings, however, provision is usually made inside for the plumbing pipes, and there are no stacks exposed on the outside walls. In the northern part of the United States and other cold climates the pipes are of necessity installed within the buildings, where they are safe from frost, protected from the danger due to heat, and do not disfigure the buildings. The former practice when installing pipes was to run them in exposed positions where they were always open to inspection, or else place them in chases in walls, which were covered with removable boards, so they could be inspected at any time. That practice, however, grew up before extra heavy pipe was used for the drainage system, and when testing of plumbing was the exception. In the present state of the art, if the stacks in an ordinary size building are made of suitable material and tested after being installed, they may safely be enclosed between the plastered sides of a wooden partition, or furred and lathed within the chase of a brick partition. There is something wrong with the workmanship or materials of a drainage system in an ordinary building which will not remain tight after being made so; and, instead of using poor materials and leaving them exposed, it is better to use materials that will withstand the ravages of time, and enclose them out of sight and out of the way. If at any future time alterations or extensions are to be made to the stacks and branches the plaster would have to be torn off, so there would be no extra expense due to removing lath and plaster to get at the pipes. Large soil pipes are not desirable objects sticking out in the living rooms of a private house, and, besides being unsightly, they are noisy in the extreme when water is flowing through them. For these reasons it is better to enclose all drainage pipes in dwellings unless for some special reasons they are desired exposed. The noise due to water flowing through soil pipes is a matter but little considered by plumbers, yet it is one of the serious objections to plumbing work and one which can easily be removed. When a soil stack passes down through a partition between the living rooms of a house it is well to take some precaution toward deadening the sound when a water closet is operated. Filling that section of the partition with plaster after the stack is tested will go a long way towards making the flush of water through a stack noiseless.

In tall buildings, many stories in height, the better practice is to run the soil, waste and vent stacks exposed to sight. The reason for this is that if built into the structure of the building, in case of a subsequent settlement of the building, the pipe might not be able to settle likewise and damage to the drainage system would be sure to ensue. For this reason the soil, waste and vent stacks in tall buildings are built free and clear from structural parts of the building which might damage them in settling.

MATERIALS FOR STACKS AND BRANCHES.

The earliest known material that soil stacks were made of was lead pipe, made by hand, and with a soldered seam.

In some localities this material is still in use, although in the United States the use of lead pipe is restricted to branches of soil, waste and vent pipes. Indeed, to such an extent has this change been carried that in some large installations lead pipe is dispensed with entirely, while in others only the lead closet bend for the water closet is used. On account of the pliability of lead pipe it is favored more or

*The first installment in this series was published in the issue of January 23.

less by plumbers for roughing-in work, although in certain types of buildings, such as asylums, prisons and jails, lead is dispensed with almost entirely and iron pipe is used throughout the entire ramifications of the system. The reason for that, however, is so the inmates of such institutions cannot damage or remove the plumbing fixtures, as they possibly could if there were lead connections.

The material most used in the United States for soil, waste and vent stacks is cast-iron hub-and-spigot pipe, either plain or coated with tar or asphaltum. There are many reasons why cast-iron pipe makes a very desirable material for the drainage system in ordinary buildings. It is fairly inexpensive, easy to work, and make tight; when properly installed, will remain tight indefinitely; and, under favorable conditions, the life of cast-iron is almost indefinite. For extremely tall buildings, however, there are so many joints that cast-iron pipe is open to the objection that the joints might become worked loose by the contraction and expansion of the lines, or leaks might be started by vibration of the stacks. For these reasons, and because wrought pipe possesses much stronger joints, cast-iron hub-and-spigot pipe is not much used in what are termed "skyscrapers," but, instead, wrought pipe drainage systems are installed. Wrought pipe drainage systems are not all they should be, however, for when subjected to unfavorable conditions the pipe deteriorates very rapidly, in many cases being corroded clear through and destroyed in a few years' time. To protect wrought pipe drainage systems as much as possible in buildings where it is to be used, the ground work, to above the floor line of the cellar or sub-basement, is made of cast-iron pipe, and wrought pipe is used only where it will be comparatively dry on the outside. Of course, the inside will be more or less wet at all times, and subject to considerable corrosion; but, unless attacked by rust or electrolysis from the outside, such pipe will give good service in tall buildings. The wrought pipe generally used for drainage systems is galvanized both inside and outside, and, in exceptional cases, is additionally protected by dipping the pipes and fittings in a bath of pitch, tar or asphaltum. Notwithstanding these preventive measures, there is one weak point about wrought pipe which cannot easily be avoided. No matter how carefully the pipe is protected by galvanizing, or coated with bituminous materials, the operation of cutting and threading will remove the protective coating, leaving the metal in all its brightness exposed to the corroding action of the elements. Brass or copper pipe would make an ideal material for the drainage system of tall buildings, but the cost of such materials makes their use prohibitive, so that the more common materials, cast-iron pipe and wrought pipe, are of necessity the only choice.

It may be laid down as a general rule applicable to both stacks and branches that tile or earthenware pipe is not a suitable material for this purpose. There are exceptions to this rule, however, and conditions under which the use of tile pipe for this purpose is not only permissible, but actually desirable. In industrial plants where vats of chemicals are used that would damage or destroy either lead or iron pipe, earthenware pipe may be run to carry off the waste discharges, and the work will be perfectly sanitary, even though there is organic matter discharged into the drainage system from the vats with the acidulated fluid. In order that earthenware pipe may be used, however, it should be securely bedded in cement concrete, and wherever the drain has not a firm support along its entire length, as, for instance, where a branch line crosses under a ceiling to the bottom of a vat, the concrete should be reinforced with rods of iron, embedded in the under side of the mon otube, to provide the necessary tensile strength for the construction.

FIXTURE OUTLETS TO SOIL STACKS.

The point or place where outlets are left in the soil stack to which to connect the various fixtures has much to do with the general layout of the roughing-in of a bathroom or toilet room, as well as influencing to a greater or less extent the structural features around the fixtures. In some buildings, particularly steel-frame structures, beams are sometimes so located that a soil fitting for the water closet cannot be placed so the outlet will be midway between the ceiling and floor of the floor beams. When such is the case, the outlet must be placed either beneath the ceiling line or above the floor beams, so that the necessary branches can be run. When the outlets are located below the level of the ceiling line the pipes may be left exposed, as is the case in most office buildings, or they may be enclosed by constructing a false or hanging ceiling below the pipes. This latter method is often resorted to in private houses, particularly when the pipes would be exposed in a closet or small room which can easily be sealed over with little labor and at small expense. When the pipes are to be suspended beneath the ceiling, the outlet should be left sufficiently low so that if wrought pipe is being used, tongs can be placed around the pipe to make it up into place, and so the fittings will have ample room in which to turn. When cast-iron soil pipe is used, the outlet must likewise be kept far enough

below the ceiling line so there will be room to calk the joints.

When the outlets can be located in the space between the joists, above the ceiling and below the floor line, it makes the best possible installation. The pipes are then all concealed from view, where they are protected from damage, and they are easier to install. When roughing-in the closet and other fixtures, outlets between the floor beams, the outlets should be left sufficiently low so that there will be a good fall to the waste pipe to provide good drainage from the several fixtures. It was the practice formerly to leave but one outlet, a 4-inch opening for the water closet, and connect the waste pipes from the various other fixtures into the lead closet bend. The better practice, and the one which now prevails, is to provide a 3-inch opening for the closet bend, and, instead of connecting the lead branches from other fixtures into the lead bend, provide separate outlets for them in the soil stack. By this means each fixture is connected up separately and independent of the others, and there is less of a pull on the water in the traps.

Hot Water Heating for Apartment Houses and Office Buildings—VI*

By Chas. L. Hubbard

Conclusion

Indirect Stacks.—In connecting up the stacks it is not desirable to supply more than 80 to 100 square feet of radiation from a single connection. When the requirements call for larger stacks they should be divided into two or more groups according to the size.

The flues and casings for indirect hot water are similar to those for steam. For cleanliness as well as for obtaining the best results, indirect stacks should be hung at one side of the register or flue receiving the warm air, and the cold air duct should enter beneath the heater at the other side.

A space of 10 inches at least should be allowed for the warm air above the stack, and the top of the casing should slope up slightly toward the warm air outlet.

The cold air space beneath the stack should not, in general, be much less than 8 inches for the best results.

The amount of air warmed per square foot of surface is slightly less than in the case of steam, but, on the other hand, the temperature, and consequently the velocity of the air in the flues, is somewhat reduced, so that the flues may be made the same size as for steam when based on the square feet of heating surface. For ordinary conditions the warm air flues may be given 1½ square inches area for each square foot of radiation for first-floor rooms, 1¼ square inches for the second floor, and 1 square inch for floors above the second.

Boiler Connections.—The pipe connections about the boilers are similar to those for steam. If there is more than one boiler, the connections should be such that they may be run singly or together. This may be done by having each connect with a main header, both in case of the supply and return, and placing a valve in each connection. Provision should be made for supplying water both at the boiler and at the expansion tank.

Sewer connections are commonly made both with the boilers and with the piping system for draining each independently of the other. Other accessories commonly added are an altitude gauge placed near the boiler for showing the water level in the expansion tank, and a relief valve upon each boiler. The last is absolutely necessary unless a separate pipe is carried from each boiler to the expansion tank, so that it cannot ever be closed in.

Temperature Regulation in Rooms.—In systems of small and medium size temperature regulation is secured by varying the temperature of the water and by manipulating the radiator valves. In large and important systems pneumatic regulation is often used the same as for steam heating. This is generally effected by placing pneumatic valves upon the direct radiators, which open and close automatically as required.

In the case of indirect heating, all possibility of freezing must be guarded against when shut off, as the cold air from out of doors passes directly over the radiators. This may be done either by the use of graduated mixing dampers and allowing the water to flow through the sections all of the time, or the stacks may be made up of two banks of shallow radiators, one above the other, the lower remaining on all of the time, and the upper one operated pneumatically. By this arrangement the air is always tempered before reaching the sections which are shut off, and thus all danger of freezing is avoided.

The directions given in a previous article on the care of steam heating boilers apply in a general way to hot-water boilers so far as caring for the fires,

*Previous installments of this series of articles were published in the issues of December 26, January 2, 9, 16 and 23. These back numbers can be obtained for 10 cents a copy

cleaning and filling with water are concerned. Only the special points of difference need therefore be noted. Before building a fire all of the pipes and radiators must be full of water and the expansion tank should be about half filled as indicated by the gauge glass. Should the water in any of the radiators fail to circulate, see that the valves are wide open and the radiator free from air. Water must always be added at the expansion tank or boiler when for any reason it is drawn from the system.

The required temperature of the water will depend upon the outside conditions, and only enough fire should be carried to keep the rooms comfortably warm. Thermometers should be placed in the flow and return pipes near the boiler as a guide in firing. Special forms are made for this purpose in which the bulb is immersed in a bath of oil or mercury.

Finis.

Practical Suggestions about Blower Systems for Shop Heating—II*

By F. R. Still

Written specially for "Domestic Engineering"

It is always advisable to run the ducts inside the building because of the heat wasted if they are run outside, be they above or below the ground. It is, furthermore, advisable to make the ducts of galvanized iron and suspend them in the open air overhead, if possible, as the loss of heat from underground ducts is enormous.

A fair idea of what this loss sometimes amounts to may be gained from mention of a case a few miles north of Grand Rapids, Mich., at a large silk mill. The basement wall is built of stone about three feet thick. The duct is built of brick above the basement floor, along the outside wall, beneath the windows.

In the winter when the outside temperature is down near zero and there is a foot or more of snow on the ground, the grass is perfectly green for a space extending out from the building nearly ten feet in width, and for ten feet more there is no snow, though the grass is dead.

Had the duct been made of iron and run inside the building all this heat would have been radiated into the surrounding atmosphere, thus helping to maintain the required temperature, instead of keeping the grass green. The location of trunk line ducts and the disposition of the branches therefrom is a matter requiring considerable practical experience and good judgment.

The modern shop has a trussed roof, the bottom chords of which are often 30 to 50 feet above the floor. The ducts have to rest on these trusses, and it is impossible to drive air from them down to the floor in a way that will produce satisfactory results. This method has been tried often enough, but there still remain others who must be convinced of its impracticability by trying it themselves. The only way to obtain an even distribution of heat is to discharge heated air at such points as it is most needed and where the effect will be most appreciated.

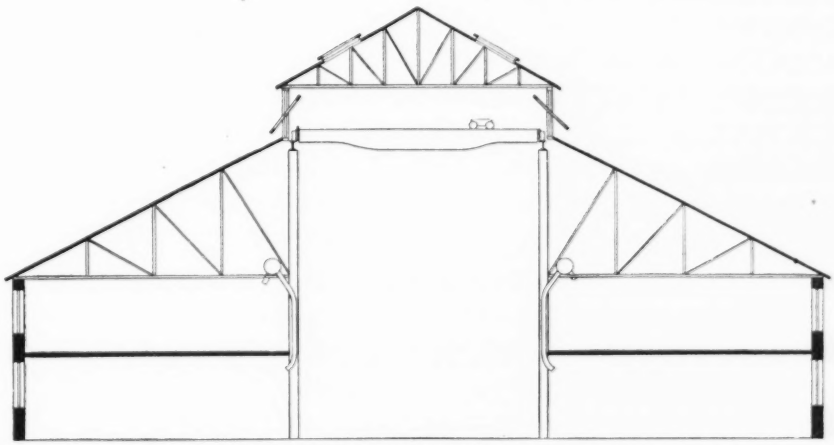


Fig. 3. Showing one method of taking branches from main hot air ducts.

To distribute the heat evenly necessitates running the ducts to all cold spots; it is needed the most in the lower strata near the floor, not up among the roof trusses; the greatest benefit is derived from the system by diffusing the warm air close to the

*The first part of this article was published in the issue of January 23.

floor, keeping the lower strata in circulation and thereby warming it by mixing with it the warm air discharged from the ducts.

The best way to bring this about is to extend the branch ducts from the main trunk line over to the walls or to posts not more than 20 feet away from the outside walls, then down toward the floor, ending four or five feet from the floor. (Figs. 3 and 4.) The air should discharge directly toward the floor or at only a slight angle from perpendicular. This method will be found most effective in machine shops, foundries and other lofty structures.

In paper mills, rubber works, dye houses and other plants for which the building is of the same type as those just noted, it is necessary to blow some hot air out towards the roof as well as down

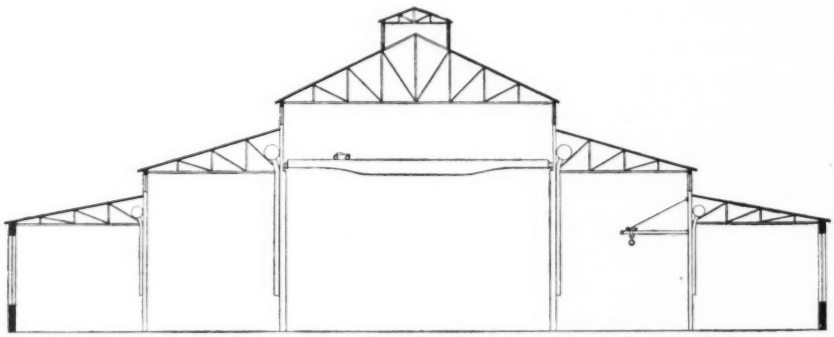


Fig. 4. Shows another method of taking branches from main hot air ducts.

towards the floor (Fig. 5), in order to take care of the condensation which would otherwise collect on the under side of the roof. Even then, in very cold climates, it is sometimes necessary to put in a false ceiling to overcome this annoyance, particularly if the roof is built of a material which is a good conductor of heat.

For buildings which are several stories in height, each story being from 10 to 16 feet high, the treatment should be different. With them, it is possible, and sometimes advisable, to introduce the air near the ceiling, blowing downward at an angle of 30-45 degrees from horizontal.

Frequently buildings of this character are quite effectively heated from one or two galvanized iron stand pipes run up through the middle of the building with outlets into each story (Fig. 6). This method is practical in buildings not over 60 feet wide; if the building is not over 100 feet long, one riser will be sufficient.

For cotton, woolen, or silk mills, it has become almost the universal practice to build vertical warm air flues on the outside face of the pilasters, on both sides of the building (Fig. 7). These flues usually have a 2-inch air space built into the brick work to insulate them. The air is admitted to each story about eight feet above the floor. Deflecting "mill dampers" regulate the volume of air discharged through each opening. The various flues can be supplied at their base from a main duct built either of masonry or galvanized iron.

For manufacturing plants, it is customary to make the trunk line ducts of such an area as will convey the required volume of air at a velocity varying from 1,500 to 2,400 feet per minute. In high buildings used for heavy and coarse work, where most of the employes stand or move about considerably, the velocity can be much higher than in shops divided into several stories, or those in which the work is more or less sedentary, like the manufacture of shirts, gloves, etc., where the employes sit all day, simply feeding the material into machines.

Air currents or drafts are of no material moment in the former shops, while in the latter they will produce great discomfort, if not sickness. Therefore, the latter class should have the main ducts of sufficient area to keep the velocity down to 1,200 to 1,800 feet per minute and the branches should be proportioned to a velocity of 600 to 1,200 feet.

Another advantage the blower system possesses, infrequently brought to notice, is the cooling and comforting effect it has in oppressively warm weather in the summer time. Simply running the fan will, of itself, greatly relieve the oppressiveness, and when cold water is circulated through the coils the difference is very noticeable.

One instance will suffice to show how effective the blower system is as a medium for cooling foundries in the summer time. The Bellevue Pipe and Foundry Co., Bellevue, Ohio, had the American

Blower Co., of Detroit, Mich., install a blower heating system in their foundry. The question of cooling the building was not discussed at the time the plant was bought, but the possibility of doing so occurred later to the purchasers, who tried it with most satisfactory results, as shown by the following letter:

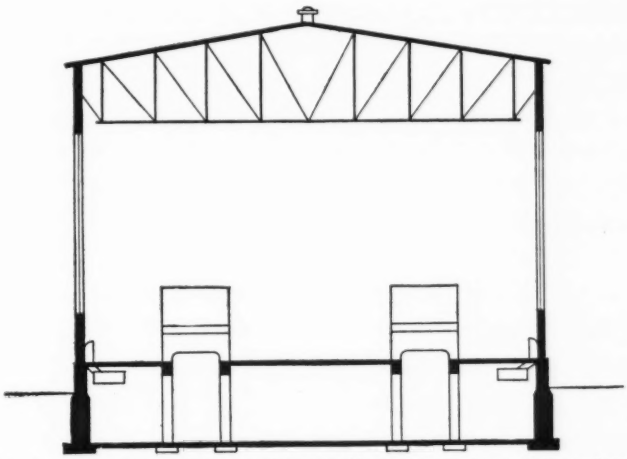


Fig. 5. Showing design for shop heating system to avoid condensation on under side of roof.

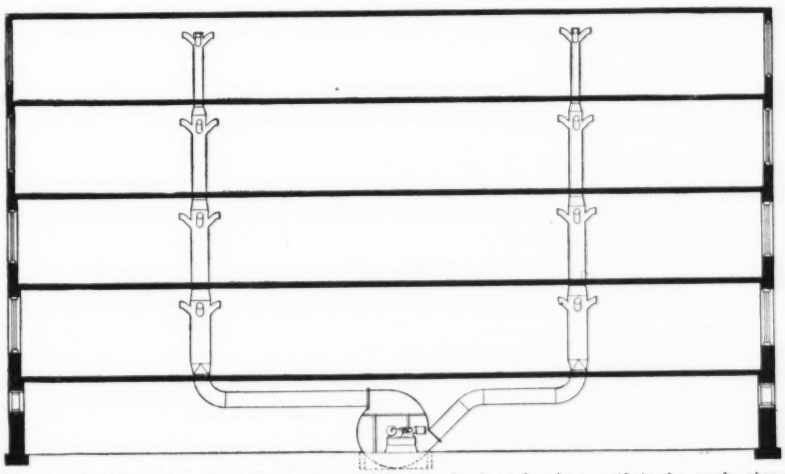


Fig. 6. Showing shop heating system with stand pipes having outlets in each story.

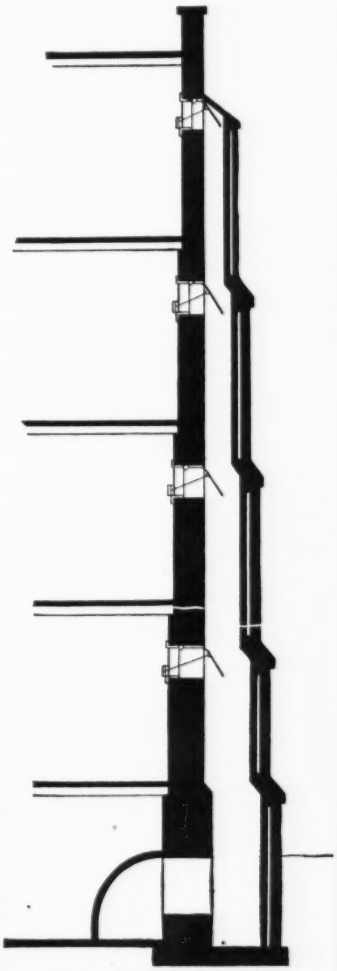


Fig. 7. Method of heating cotton, woolen or silk mills.

"As you are aware, we installed a blower heating plant in our establishment. In connection with same we desire to say that it has not only given us excellent satisfaction for heating purposes, but has proven equally as satisfactory for reducing the humidity in our workshop. In the foundry, especially during cast time, the heat is almost unbearable in the hot summer days; in fact, the writer has never had any experience during all his foundry practice prior to the present, where there was not more or less time lost during the summer months on account of the overbearing heat in the moulding room.

"It occurred to me that the coils filled with cold water and a fan applied ought to work equally as well for cooling as it does for heating when the coils are filled with steam. We accordingly made the experiment with the result that we have not lost a single day in our moulding room and have always had the shop at a nice working temperature. It gives us pleasure to make this statement. I know you will be pleased to learn of the result.

Yours truly,

THE BELLEVUE PIPE AND FOUNDRY CO.,

H. D. KELLER, Pres.

There is often a wide variation of opinion as to

the best temperature to maintain in cold weather. As a general proposition, in foundries and other buildings where the work is active and somewhat vigorous, a temperature of 50 to 55 degrees is sufficient. In machine and wood working shops, it should be from 60 to 65 degrees. In shoe, clothing and other factories employing help where the work is more or less sedentary, the temperature should be 68 to 72 degrees.

The basis for determining the amount of heating surface is the most difficult point to settle. In northern climates, the outside temperature occasionally drops down to 10 degrees below zero, and in Minnesota, Dakota and Montana, it goes even lower than 30 degrees below zero. If a plant is designed for these extremely low temperatures, it is too large for the conditions prevailing for 95 per cent of the year. It therefore becomes a question of very fine judgment as to just what should be the basis upon which to figure. The following table will give a fair idea of what the resulting temperatures will be under the varying outside atmospheric conditions, the basis being zero:

Class of Building	Temp. desired Inside	Resulting Inside Temperature— Temp. Outside 30° Below 0	Temp. Outside 20° Below 0	Temp. Outside 10° Below 0	Temp. Outside 0	Temp. Outside 10° Above 0	Temp. Outside 20° Above 0	Temp. Outside 30° Above 0
Foundries	50	22	32	41	50	57	63	70
Machine Shops..	60	34	43	52	60	67	73	78
Clothing Shops..	70	45	55	63	70	76	81	86
Paint Shops....	80	59	67	74	80	85	89	92

From the table it will be noted that for climates where the temperature does not drop below—20 degrees, an inside temperature based on zero outside gives very fair average results; but for climates where the temperature may be from—30 degrees to—10 degrees for several days at a time, the basis is not low enough. For such cases, if the basis is zero, the resulting temperature should be figured about 10 degrees higher than normal, or the temperatures in the table given for machine shops should be taken for foundries and the temperatures for clothing shops should be taken for machine shops.

On the other hand, if the coldest temperature ever reached is zero, and the protracted cold spells are usually at outside temperatures of from 10 to 20 degrees above zero, the basis for determining the size of the plant in zero weather would be 40 degrees at zero for foundries and then taking the tabulated temperatures of foundries for machine shops and the latter for clothing shops.

In this way, considerable unnecessary expense can be saved in the initial cost of the plant; it will be smaller and hence much less costly to operate. It is all well enough to argue that the steam can be cut down on the heating coils and the speed of the fan reduced when the weather conditions moderate, but this is usually not done, simply because it is nobody's business to see that it is done, and instead of thus economizing in the cost of operation, one will invariably find the shop windows and doors open when it becomes too warm inside. Therefore, the more nearly the size of the plant conforms to the needs during average weather conditions, the less it will cost to operate it, and this can only be brought about by settling first on what temperature will be satisfactory for the few days of extremely cold weather. This applies to any heating system, and if anything, should be given greater weight for any other than the blower system, as no other can be so readily adjusted to varying weather conditions.

With the blower system one or more sections can be cut out of the heating coils and the blower slowed down in moderate weather; or, steam at a higher pressure can be turned into the coils and the fan be driven at maximum speed for extremely cold weather.

To sum up: The proper heating of factory buildings is of as much importance and involves as many problems as anything the manager has to decide. It is as essential as the transmission, tools or light, and very much more complex. It should be considered with the plans of the building and made an integral part of the construction, having in mind all the time the equipment best suited to the type of building and the purpose for which it is built.

Fresh air is essential to life. Man can clothe himself to withstand cold, but he cannot get along without air. The purer it is, the better health he has and the faster and better he can work. Therefore, any heating system which does not provide for fresh air should have no consideration.

Something in the way of a ventilating plant is required where manufacturing processes generate steam, smoke and gases. Cold air only makes bad matters worse, so the ventilation necessarily becomes a part of the heating system.

The subject of the proper temperature to maintain in shops is one that does not receive the careful attention it should. It is, if anything, worse to overheat a shop than to underheat it. A fair average temperature should be arrived at and the heating system be flexible enough to keep the shop

comfortable when the temperature outside is above and below average.

The distribution of the heat is very important and must be varied with the nature of the building and the work done within its walls. Consideration must also be given to the air velocities, for the purpose of ventilation.

While the cooling of a building is not of the utmost importance, it certainly has great advantages in many ways, and if a system makes it possible of accomplishment without complication or great expense, it becomes a valuable asset to any plant.

These advantages, more or less amplified in the foregoing, as well as many others which have been covered by various writers, all point to but one system of heating as best adapted to manufacturing plants, and that one is the blower system. While it is quite generally recognized as the best, the proper way to install is not so generally understood, and to give some superficial ideas along this line was what prompted the foregoing.

Finis.

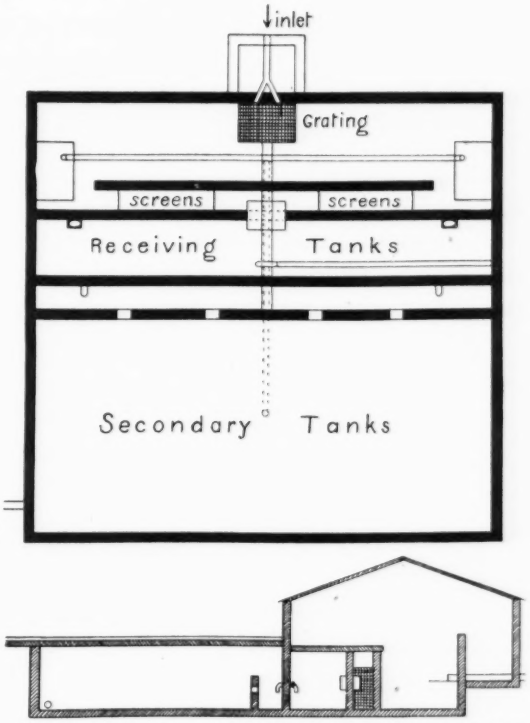
Sewage Disposal System for an Institution with Two Thousand People

By Prof. H. N. Ogden

The New York State Soldiers' and Sailors' Home is situated about one and one-half miles north of the village of Bath, and lies in the Chemung valley, about eight miles southwest of the southern extremity of Keuka lake. The attendance at the home ranges from 1,800 to 2,200 with a yearly increase of about fifty, the maximum attendance being attained February 1, and the minimum about June 1.

The water supply is obtained from two 105 feet artesian wells in the valley, and from springs on the hillside above the commanding officer's residence. About 200,000 gallons of water are used daily, or an average of about 100 gallons per head per day. Of this amount two-thirds is obtained from the wells and the remainder is obtained from the springs. In times of heavy rains, though the receiving area of the springs is kept well cleaned, the spring water has an unpleasant taste and it is intended soon to sink a third well in the valley. The two wells have been used continually for fifteen years, and the flow from them has at all times been good.

The sewage system was built in 1889 and has been used constantly since that time receiving the sewage from all of the inmates of the Home. The sewage is purified chemically, fifteen bags of lime and 1,000 pounds of sulphuric acid being used each month, or one-half bag of lime and thirty-three pounds of acid daily, to effect the purification. Thirty-five buildings, either barracks or workshops



Diagrams showing plan and sectional view of sewage disposal system of the New York State Soldiers' and Sailors' Home at Bath, N. Y.

of the Home, have been connected to the system. A barn, housing twelve to fourteen horses, is also connected with the system but the excreta is removed from the barn every day or every other day. The sewage from the commanding officer's residence and from the six homes of civilian officers empties into cesspools. The entire sewage system is underdrained and a separate storm system is used. It comprises one and five-tenths miles of pipe and the chemical precipitation tank which treats about 150,000 gallons of sewage, or seventy gallons per head per day.

The sewage, which is domestic, enters the receiv-

ing tank through an eight-inch pipe, and flows over a cast iron grating about three and one-half feet from the bottom of the tank. This grating has half-inch square openings between flat one-inch by one-quarter inch bars. There are two of these receiving tanks 20 feet by 24 feet by 9 feet, the sewage flowing into them alternately for twenty-four hours. The line is placed on the grating at the outlet of the supply pipe before sewage enters the tank, being washed into the tank by the sewage as it enters. The sewage accumulates in the receiving tank until nearly three feet in the distributing tank before siphoning into the discharge pipe, but at the present time the walls of the distributing tank are in such poor condition that the sewage is allowed to pass directly through to the discharge pipe. The discharge pipe is about one-fifth of a mile long and empties into the Chemung river. After the sewage has been flowing into one of the receiving tanks for twenty-four hours the flow is diverted to the other and the sulphuric acid is then added to the highly charged sewage in the receiving chamber.

Chemical precipitation plant at Bath, N. Y. The sludge beds can be seen in the foreground.

a depth of about three and one-half feet is reached when it overflows to a secondary settling tank 15 feet by 50 feet by 7 feet. In flowing from the supply tank to the secondary settling tank the sewage passes through two gratings, the first being made of vertical wrought iron bars three-eighths of an inch in diameter and spaced one inch on centers, and the second being made of three-sixteenths of an inch material woven so as to have a half-inch mesh both vertically and horizontally. Coarse floating material is prevented from passing the first screen by a sheet-metal apron hung at the elevation of the surface of the sewage. From the secondary settling tank, which is connected with the receiving tank by a valve, the sewage flows to a distributing tank. Originally the sewage accumulated to a depth of

After thorough stirring, and after standing for one hour, the sewage and accumulated sediment is pumped by a centrifugal suction pump a distance of 150 feet upon a sludge bed. The valve connecting the receiving and secondary settling tanks is opened and the weaker liquid of the secondary settling tank assists materially in diluting the sediment of the receiving tank to such a condition that it may be pumped. From the sludge beds the liquid matter filters into a small catch-basin and is carried about seventy-five feet by a six-inch pipe to the distributing tank where it mingles with the effluent from the secondary settling chambers.

There are two sludge beds, irregular in outline, and having a combined area of about one-tenth of

Concluded on page 132

Domestic Engineering's Data Sheets

22

Jan. 30, 1909

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Published by Domestic Engineering, Chicago, 1909

Weights of Galvanized Iron Pipe for Heating and Ventilating Work.

Contributed by F. R. STILL. See also sheet published January 16, 1909.

LENGTH OF PIPE IN FEET.

DIAMETER OF PIPE IN INCHES. | GAUGE No. 24 | GAUGE No. 26

	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	6	47	48	49	50	51	52	
8	65	68	70	72	74	77	79	81	83	86	88	90	92	95	97	99	101	104	106	108	110	113	115	117	8
9	72	75	77	80	82	85	87	90	92	95	97	100	102	105	107	110	112	115	117	120	122	125	127	130	9
10	73	75	78	80	83	85	88	90	93	95	98	100	103	105	108	110	113	115	118	120	123	125	128	130	10
11	80	82	85	88	91	93	96	99	102	105	107	110	113	115	118	121	124	127	129	132	135	138	140	143	11
12	87	90	93	96	99	102	105	108	111	114	117	120	123	126	129	132	135	138	141	144	147	150	153	156	12
13	94	97	101	104	107	110	114	117	120	124	127	130	133	137	140	143	146	149	153	156	159	162	166	169	13
14	102	105	109	112	115	119	123	126	130	133	137	140	144	147	151	154	158	161	165	168	172	175	179	182	14
15	109	112	116	120	124	127	131	135	139	142	146	150	154	157	161	165	169	172	176	180	184	187	191	195	15
16	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	16
17	152	157	163	168	173	179	184	189	194	199	205	210	216	221	226	231	236	241	246	252	257	263	268	273	17
18	160	165	171	176	182	187	193	198	204	209	215	220	226	231	237	242	248	253	259	264	270	275	281	286	18
19	167	172	178	184	190	196	201	207	213	218	224	230	236	242	247	253	259	264	270	276	282	288	293	299	19
20	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	20
21	188	195	202	208	214	221	227	234	240	247	254	260	266	273	280	286	292	299	306	312	319	325	332	338	21
22	196	202	209	216	223	229	236	243	250	257	263	270	277	284	290	267	304	311	317	324	331	338	344	351	22
23	203	210	217	224	231	238	245	252	259	266	273	280	287	294	301	308	315	322	329	336	343	350	357	364	23
24	217	225	232	240	247	255	262	270	277	285	290	300	307	315	322	330	337	345	352	360	367	375	382	390	24
25	225	232	240	248	256	263	271	279	286	294	302	310	318	325	333	341	349	356	364	372	380	387	395	403	25
26	232	240	248	256	264	272	280	288	296	304	312	320	328	336	344	352	360	368	376	384	392	400	408	416	26
27	239	247	256	264	272	280	289	297	305	314	322	330	338	346	355	363	371	380	388	396	404	413	421	429	27
28	247	255	264	272	281	289	298	306	315	323	332	340	349	356	366	374	385	391	400	408	417	425	434	442	28
29	254	263	271	280	289	298	306	315	424	332	341	350	359	368	376	385	394	403	412	420	429	438	446	455	29
30	261	270	279	288	297	306	315	324	333	342	351	360	369	378	387	396	405	414	423	432	441	450	459	468	30
31	319	330	341	352	363	374	385	396	407	418	429	440	451	462	473	484	495	506	517	528	530	550	561	572	31
32	326	338	349	360	371	383	391	405	416	428	439	450	461	475	484	495	506	518	529	540	551	563	574	582	32
33	334	345	357	368	380	391	403	414	426	437	449	460	472	483	495	506	518	529	541	552	564	575	587	598	33
34	348	360	372	384	396	408	420	432	444	456	468	480	492	504	516	528	540	552	564	576	588	600	612	624	34
35	355	368	380	392	404	416	429	441	453	465	478	490	502	515	527	538	551	563	575	588	600	612	625	637	35
36	363	375	388	400	413	425	438	450	463	475	488	500	513	525	538	550	563	575	588	600	613	625	638	650	36
37	377	390	403	416	429	442	455	468	481	494	507	520	533	546	559	572	585	598	611	624	637	650	663	676	37
38	392	405	419	432	446	459	473	486	499	513	526	540	554	567	581	594	608	621	633	648	662	675	689	702	38
39	399	412	426	440	454	467	481	495	509	522	536	550	564	578	591	605	619	633	646	660	674	688	701	715	39
40	406	420	434	448	462	476	490	504	518	532	546	560	574	588	602	616	630	644	658	672	686	700	714	728	40
41	421	435	350	464	479	493	508	522	537	551	566	580	505	609	624	638	653	667	682	696	701	725	740	754	41
42	428	442	457	472	487	501	516	531	546	560	575	590	605	620	634	649	664	679	694	708	723	738	752	767	42
43	580	600	620	640	660	680	700	720	740	760	780	800	820	840	860	880	900	920	940	960	980	1000	1020	1040	43
44	595	615	636	656	677	697	718	738	759	779	800	820	841	861	882	902	923	943	964	989	1006	1025	1046	1066	44
45	609	630	651	672	693	714	735	756	777	798	819	840	861	882	903	924	945	966	987	1008	1029	1050	1071	1092	45
46	616	638	659	680	701	723	744	765	786	808	829	850	872	893	915	935	956	978	1000	1021	1042	1063	1084	1105	46
47	631	653	665	696	718	740	762	783	805	827	849	870	892	914	936	958	980	1001	1023	1045	1066	1088	1110	1131	47
48	645	668	690	712	735	757	779	801	824	846	868	890	913	935	957	979	1001	1023	1045	1063	1000	1112	1134	1156	48
50	667	690	713	736	759	782	805	829	851	874	896	920	943	966	989	1012	1035	1058	1081	1104	1127	1150	1173	1196	50
52	703	727	752	776	800	824	849	873	897	922	946	970	994	1019	1043	1067	1091	1115	1140	1164	1188	1212	1237	1261	52
54	725	750	775	800	825	850	875	900	925	950	975	1000	1025	1050	1075	1100	1125	1150	1175	1200	1225	1250	1275	1300	54
56	979	1013	1045	1080	1114	1148	1181	1215	1249	1282	1316	1350	1384	1418	1451	1485	1519	1553	1587	1620	1654	1688	1721	1755	56
58	1015	1050	1095	1120	1155	1190	1225	1260	1295	1330	1369	1400	1435	1470	1505	1540	1575	1610	1645	1680	1715	1750	1785	1820	58
60	1051	1088	1124	1160	1196	1232	1269	1305	1341	1378	1414	1450	1486	1522	1559	1595	1632	1668	1704	1740	1777	1813	1850	1886	60
62	1102	1140	1178	1216	1254	1292	1330	1368	1406	1444	1582	1520	1558	1596	1634	1672	1710	1748	1786	1824	1862	1900	1938	1976	62
64	1131	1170	1209	1248	1287	1326	1365	1404	1443	1482	1521	1560	1599	1638	1677	1716	1755	1794	1833	1872	1911	1950	1989	2028	64
66	1160	1200	1140	1280	1320	1360	1400	1440	1480	1520	1560	1600	1640	1680	1720	1760	1800	1840	1880	1920	1960	2000	2040	2080	66
68	1197	1238	1279	1320	1361	1402	1443	1485	1526	1568	1609	1650	1691	1732	1774	1815	1856	1898	1939	1980	2021	2062	2103	2144	68
70	1225	1268	1310	1352	1395	1437	1479	1522	1564	1606	1648	1690	1733	1775	1819	1860	1902	1944	1986	2028	2071	2113	2155	2198	70
72	1261	1305	1349	1392	1436	1479	1523	1566	1610	1653	1697	1740	1783	1827	1870	1914	1957	2000	2043	2087	2131	2175	2219	2263	72

Sewage Disposal System for an Institution

Concluded from page 130

an acre. They are earth basins surrounded by a ditch into which the liquid part of the sewage filters, and by which it is carried to the catchbasin. The solid matter is allowed to accumulate in each bed for six months and is then removed and used as fertilizer. About eighty-five tons of solid matter are removed at each cleaning.

The sewage, as it enters the receiving chamber, is nearly colorless, is very weak and has but a slight odor. When it enters the distributing chamber it is clear and without sediment or odor. Two samples of the effluent taken at the distributing chamber, however, showed signs of putrescibility in twenty-seven hours. This test, however, is as severe a one as could be made, as the samples were taken in the middle of the afternoon when the receiving and secondary settling tanks were filled and when the liquid portion of the sewage was flowing directly through the plant into the discharge pipe.

The plant is cared for by two inmates of the home who usually spend each morning at the plant. The cost of maintenance for two years is given below:

Period.	Chemicals.	Repairs.	Wages.	Totals.
Oct.—Dec., 1903.....	$78 00	.....	$45 00	$123 00
Jan.—March, 1904	78 00	.....	45 00	123 00
Apr.—June, 1904	78 00	.....	45 00	123 00
July—Sept., 1904	78 00	$7 75	45 00	130 75
Total cost				$499 75
Deduct for 160 tons fertilizer				160 00
Net cost				$339 75

Period.	Chemicals.	Repairs.	Wages.	Totals.
Last quarter, 1905	$73 00	.....	$45 00	$118 50
First quarter, 1906	73 50	.....	45 00	118 50
Second quarter, 1906 ...	59 60	.....	45 00	104 60
Third quarter, 1906 ...	59 60	$59 80	45 00	164 40
Total cost				$506 00
Deduct for 180 tons fertilizer				180 00
Net cost				$326 00

The illustration shows the building over the screen and receiving tanks and also the sludge beds in the foreground.

The Failure of a College Education.

"Well," observed Old Man Potts, "I've spent a heap of money on my boy Bill's education, more'n nine hundred dollars jest to see him through Yale. And I ain't through yet. It shorely makes me sore to think of the money I'm wasting on a boy who ain't got as much sense now as he had before he went to college."

"What's the matter, father?" asked Mrs. Potts. "Mebe you're a little hard on Bill."

"No, I ain't Mary," answered the old man. "Jest to show you—a little while ago I says to him I thinks it was going to rain tomorrow. What fool answer d'ye suppose he made me?"

"I'm sure I don't know, father."

"He begged my pardon!"—Harper's Weekly.

A New Plumbing Ordinance for Oakland, California*

Conclusion

Water Closets.

Section 39. Excepting flushometer closets all water closets within a building must be supplied from separate tanks or cisterns, the water of which shall not be used for any other purpose.

A group of water closets may be supplied from one tank, but water closets located on different floors must not be supplied from one tank.

Plug, pan valve closets and common hopper closets are strictly prohibited in any part of a building or premises.

Flush rim hopper closets offset and washout closets are not allowed, excepting they are located outside of the building proper.

When water closets are supplied from tanks, the down or flush pipe shall in no case be less than one and one-quarter inches, inside diameter.

No rubber connections shall be allowed between water closets and vent pipes.

When water closet is connected to the soil pipe by and through a lead bend, then the outlet side of the bend must be properly wiped to a brass ferrule, and the ferrule be properly caulked into receiving hub.

When a water closet is not connected to the soil pipe by a lead bend, then it may be connected by and through a lead pipe lengthening piece, which shall be properly wiped to a heavy brass ferrule and the ferrule be properly caulked into the receiving hub.

Section 40. When water closets are so constructed that the trap is a part of the closet, then they must be of all earthenware or enameled iron, or of a combination of these materials.

All water closets' receivers must be of either earthenware or of enameled iron; no stone, cement, brick, wooden or other porous substance will be permitted to be used. This shall apply to both single water closets and closets built in series or ranges.

Ratio of Water Closets and Urinals.

Section 41. Each tenement and flat and store must be provided with not less than one water closet and one sink.

In all places of employment where men and women are employed, separate and sufficient water closets shall be provided for the males and females, as required by these rules and adjoining regulations.

The water closets provided for males shall be plainly marked "Men's Toilet," and the water closets provided for women shall be plainly marked "Women's Toilet."

In all places of employment coming under Section 41 not less than one water closet shall be provided for every fifteen males or lesser number, and not less than one water closet shall be provided for every fifteen females or a lesser number, and these water closet facilities shall be provided at least every second story, and

*The first two installments of this plumbing ordinance were published in the issues of January 2 and 16. These back numbers can be obtained for 10 cents a copy.

where there are employes in a basement such basement shall be considered as being a story.

In lodging houses or hotels hereafter erected or altered there shall be provided not less than one water closet for every fifteen females or lesser number. The number of water closets required shall be determined from the number of lodging quarters provided in said lodging house or hotels.

In all buildings used jointly for residence and business purposes, separate and sufficient water closets shall be provided for the use of families, employes and patrons of the place.

No Wooden Sinks or Wash Trays, etc.

Section 42. Excepting upon application to, and upon the written permit from the Board of Health, no wooden sink nor wash tray shall be allowed on premises.

Bath tubs, the frame of which is wooden and which frame is lined with sheet metal, are not allowed, and all fixtures must be open to the free circulation of air and not enclosed so as to harbor vermin.

Ventilation of Rooms.

Section 43. Each and every compartment wherein a water closet, urinal or slop or scullery sink is situated shall be ventilated by means of a window opening directly to the external atmosphere, or by means of an air shaft having an area of at least four square feet. This air shaft shall continue of undiminished size to the roof, and at this point its openings shall equal in area not less than that of the shaft.

No air shaft or window ventilating either a water closet, urinal, slop or scullery sink compartment shall discharge into nor ventilate any other compartment whatsoever.

The provisions of the preceding paragraph shall not prevent the enlargement of air shafts to a size suitable and adequate to ventilate a series of closet, urinal, slop or scullery sink compartments.

Buildings Moved or Altered.

Section 44. When a building is moved, or when an addition or an alteration is made to and in a building where new fixtures are to be put in the addition and old fixtures are to be altered and reset in the old portion of the building, then both the new fixtures put in and the old plumbing in the building must be placed in a sanitary condition and comply with the rules and regulations.

Condemnation of Buildings.

Section 45. When a building has been inspected and the plumbing work condemned by the Health Officer as being in an unsanitary condition, plans must be filed and the new plumbing work or alterations must be executed in accordance with this ordinance.

Pipes Must Not Be Built Into Walls.

Section 46. No sewer, drain, soil, waste, leader or vent pipe of any kind shall be built in brick, cement, stone or concrete walls. When necessary to conceal pipes of this class, then they must run in suitable reveals or recesses. Except that in horizontal walls, where sewer pipe passing behind elevator shafts require that it be offset in, the Board of Health may, in its discretion, permit it to be built in wall to prevent weakening the same.

Registration.

Section 47. On and after the passage of this ordinance every plumber doing business in the City of Oakland shall register his name and address at the Health Office of said city.

Bonds.

Section 48. Every master plumber, before he shall be allowed to register, shall give a bond to the City of Oakland in the sum of five hundred dollars, with two good and sufficient sureties, for the faithful discharge of his duties as a master plumber, which said bond shall be approved of and filed with the Board of Health.

Affidavit.

Section 49. After the passage of this ordinance every person, firm or corporation engaging in the plumbing business shall appear in person or by duly authorized representative at the office of the Plumbing Inspector of the Board of Health, and register his name and place of business, age and nativity, and the same shall be subscribed and sworn to by the party making application on blanks to be provided by the secretary of the Board of Health. He shall then receive from the secretary of the Board of Health a certificate of registration.

Qualifications for Master Plumber.

Section 50. No person shall receive a license as a master plumber who has not attained the age of twenty-one years and who has not an established place of business in the City of Oakland.

License.

Section 51. No license shall be granted to a master plumber for more than one year or for the unexpired portion thereof.

All licenses expire upon the first day of January of each year unless sooner revoked.

Upon the expiration of the yearly license every master plumber carrying on the business of plumbing shall be required to be again registered and file a new bond as provided for in Sections 47, 49 and 50.

Examinations.

Section 52. No license shall be granted to any person making application to become registered as a master plumber or as a journeyman plumber unless said person shall have passed a satisfactory examination by the Board of Health as to his qualifications to conduct the business of plumbing.

Examinations under this section shall be held on the first and third Tuesdays of each month at 8 p. m., at the office of the Board of Health.

Installation, Alteration, etc.

Section 53. Plans will not be required for the removal of stoppage in drains, soil, waste or vent pipes, or replacing fixtures, tanks or faucets, nor for repairing of leaks.

When plumbing work is to be done in several adjoining buildings or in apartment houses, where the arrangement of pipes and fixtures is exactly the same in each and all, being done under one contract, a plan showing one main line of vertical soil pipe, with all

the side branches of waste pipe, the location of fixtures and traps and all the necessary vent pipes in connection with the same, will be sufficient. But in such case a general ground plan showing lines of sewer with a clearly written statement of the number of houses or compartments to be done, and specifying the number and kinds of fixtures to be used, must accompany such plan.

It will be the duty of the Sanitary Inspector, when plans are filed, to either reject or approve such plans within 24 hours from date of such filing, and to notify the person filing said plans of his acceptance or rejection, and in case of rejection to state clearly the cause of rejection, in which case new plans must be filed subject to all the above conditions.

When plans are filed and approved, work must begin within 30 days from date of filing, and such work must be carried on and be completed within reasonable time, weather permitting, otherwise such plans shall become void and new plans must be submitted.

When plans are filed and approved by the Sanitary Inspector in no case shall there be any deviation from such plans without the sanction of the owner or agent. Before such changes are made, they must be submitted to the Sanitary Inspector for his approval.

If such changes are of a material nature, new plans shall be filed showing such changes.

Who's Who in Britain—XIII

Francis William Raynes, R. P., born near Matlock, Derbyshire, England, gained much practical experience of plumbing in Manchester, where he was appointed at an early age workshop instructor in plumbing at the School of Techno'ogy and rose to be chief assistant to the head of the Department of Sanitary Engineering. Since 1902 he has been head of the Department of Plumbing in the Glasgow and West of Scotland Technical College.

When the roughing-in work has been completed, according to approved plans, and before such work has been covered or in any way concealed from view, the said work must be subjected to a test as hereinafter specified. When work has been tested and proved perfectly tight the Sanitary Inspector shall be notified that the said work is ready for inspection, and it shall be the duty of the contracting plumber to see that all work is left open and convenient for inspection until approved.

A Sanitary Inspector shall inspect work within 24 hours after having been notified that such work is ready for inspection.

Section 54. After the passage of this Ordinance it shall be unlawful for any plumber to practice his trade in the City of Oakland without first obtaining a certificate from the Board of Health.

Before such a certificate shall be granted any person or persons to mechanically practice and execute the trade of plumbing, he or they shall first pass a satisfactory examination setting forth his ability to practice the trade of plumbing.

Section 55. It shall be the duty of every licensed master plumber to display at his place of business, outside thereof, a sign with his full registered name, and no other person than a registered plumber shall be allowed to display such sign, carry on or engage in the plumbing business or make any connection with any sewer, drain, soil or waste pipe, or any connection therewith.

Any licensed plumber who shall neglect or refuse to comply with these rules and regulations of this Ordinance shall have his license suspended or revoked.

Section 56. Assistant Sanitary Inspectors shall act under the orders of the Sanitary Inspector, assisting him in the discharge of his duties, and shall perform such other duties as may be required by the Board of Health.

Penalty.

Section 57. Any person, firm or corporation violating any of the provisions of this Ordinance shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by a fine not exceeding one hundred ($100) dollars, and in case such fine be not paid, then by imprisonment in the City Prison at the rate of one day for every two ($2.00) dollars of said fine so imposed and remaining unpaid, or by both such fine and imprisonment.

Ordinance No. 1848, approved November 13th, 1897, regulating plumbing and drainage in buildings, approved November 13th, 1897, and Ordinance No. 2108, approved September 24th, 1901, providing the manner in which the plumbing and sewerage for drainage shall be executed, are hereby repealed.

All Orders and Ordinances and parts of Orders and Ordinances in conflict with this ordinance are hereby repealed.

A Gentle Hint.

"Couples contemplating wedding tours," remarked the observer of events and things, "will please bear in mind that in the rock of Gibraltar there are seventy miles of tunnels."—Yonkers Statesman.

Learning the Craft—III*

By Phoenix

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Leaks.

Leaks are older than the "flood." I suppose Noah had trouble in getting the ark to "hold tight."

It seems queer that, during all these thousands of years, **no one** should have invented a way to **rid us of these annoyances,** but, like the tax collector, **they are ever with us.**

"Sand holes" in fittings, "porus pipe," cracked fittings, split pipe and numerous other defects **create a chain of ills and expense for both shop and customer. Experience teaches** that various "wrinkles" may be used which will afford **temporary and sometimes permanent relief.**

Some of the following suggestions will be found helpful in every day shop practice. Many people already know these "wrinkles." **Some have never heard of them,** and it is for **the benefit of the latter** that we are writing.

One of the most common leaks is due to a "sand hole" in an "ell" or "tee." **This can be fixed quite easily,** in the following manner **provided** the fitting is not too porus; if there are from one to four small holes

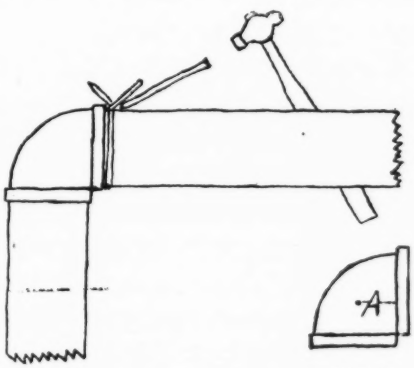


Fig. 1.

Fig. 2.

Fig. 1. Shows method of applying tin foil.
Fig. 2. Represents distance to be "taken out."

take a rather dull ¼ inch or ½ inch cold chisel and, using a light hammer, go over and around the holes with chisel and hammer cutting in just heavily enough to make **good deep dents** with the chisel.

Then hammer the fitting thoroughly around the sides of the holes, and lastly directly on top.

This will generally stop a small leak on a steam, hot water or gas job, and if you make it hold, **it will save the time and trouble of replacing the fitting.**

However, should this fail, or the fitting be too porus, try some good reliable iron cement, **following carefully the printed directions given.**

*Previous installments in this series of articles were published in the issues of January 16 and 23. These back numbers can be obtained for 10 cents a copy.

Should the fitting be a 4-inch, 6-inch, or larger "ell" or "tee," involving the taking down of considerable main, or the necessity of a "cut" and a "union" to be put in, and the sand holes be rather large, you can stop the holes by **drilling, tapping and screwing in a ⅛-inch plug.**

A very large porus fitting can be plastered, blanketed and banded, but this is **bad practice** unless it is only for temporary repairs or on a hurry-up job.

In trying to stop a leak on a split pipe there are several things to consider:

First, the **length** of the split, and also its **location,** as to whether it is on a **main, branch** or **riser.**

If on a riser, exposed to view in a room, it is better to replace the pipe at once, for the sake of appearances, and your **customer's satisfaction.**

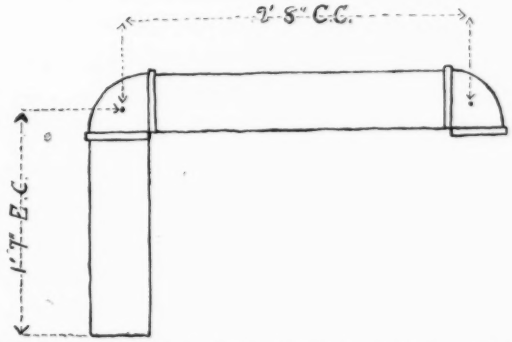


Fig. 3. Showing end to center and center to center measurements.

Also, if the split is over 12-inches long, it is also better to "pull" the pipe and put in a new one. If the split pipe is on a main or branch difficult to remove, proceed as follows: First, let the steam go down, or empty the system should it happen to be a hot water job. Then **thoroughly** clean the pipe **along** and **around** the **split.**

Now wipe into the split with your hand the iron cement—or a very thick paste made of white lead and iron dust—and shape a sheet of tin or copper around the pipe, smearing on a little more paste, or iron cement, **directly over the split,** and draw the sleeve down tightly with clamps, allowing the job to "set" **at least four hours.** You can buy the clamps already made, or have them forged at some blacksmith shop.

In calking a leak around a thread some **tin foil** will be found the safest, easiest and quickest. Carry some around with you in your overalls. Roll it up rather loosely, about the size of a cigarette, and wind it around the pipe **against the face of the fitting,** lapping the ends on the top or side, as shown in Fig. 1.

Take a ¼-inch or ½-inch dull cold chisel and a light hammer and calk **lightly** on **top first,** then at the **bottom** and then on **each side.** Now follow it up all around the pipe, a steam pipe, hot water pipe, or even on a plumbing water service.

Follow your tin foil around four or five times, then skin it off and **watch where the drops, if any, come out.**

Calk in a little more tin foil and stop these last few

drops, and your job will **generally stand all necessary pressure.**

Measurements.

A boy should learn from the very start how to take measurements **quickly, accurately, and no guess work should be allowed.**

First, my boy, learn how to **"take out"** or make the **necessary allowance** for your fittings; "end to center," or "center to center" measurements are used many times every day.

The distance along line "A" from the center of the ell to back edge of collar in Fig. 2 should be **"taken out"** in all these measurements.

In Fig. 3 the measurement 2 feet 8 inches C. C., is a center to center measurement, and when cutting your pipe **do not fail to take out or allow for both ells.**

Also, in Fig. 3, the measurement, 1 foot 7 inches E. C. is an end to center measurement, and an allowance for **one ell only,** should be made.

By noticing the different size of fittings and the amount of length to be allowed for, on each particular size or fitting, you can soon know **just how much to figure on** for the different sizes, and **not guess at it,** which always causes trouble. In measuring for 45° fittings many a journeyman has been **"up against it,"** and has frequently **lost his job** because he was too slow or **could not measure correctly.**

This explains how to take 45 degree measurements correctly

The knowledge of a very simple rule would have saved him. **It is absolutely unnecessary to hold the pipes in position,** or to lay the fittings on a bench, **after you have learned this rule—and anybody who knows the multiplication table can understand this explanation.**

The "offset" is the difference in position of your two desired runs of pipe.

In Fig. 4 you have twelve inches difference, or a 12-inch "offset."

Now the length of the pipe required properly to make this desired "offset" with two 45° ells would be 17 inches **from center to center of the ells made up.**

"Take out" for your **two** "ells" and you have the exact length to cut the pipe.

The following rule has these features over any other which has come to our notice:

1. It is easily remembered.
2. Is entirely accurate.
3. **Will apply to any size of pipe.**
4. The answer is always in inches.

This is the rule:

Multiply the actual offset in inches by 17, and divide that product by 12. "Take out" whatever is necessary for your fittings and the result is the correct length required IN INCHES.

Cut your pipe that length. **You can prove this rule for yourself** by making a drawing like Fig. 4 on the floor of your shop.

If the distance from A to C is exactly 12" and the 45° ells are placed as shown in Fig. 4, the distance from

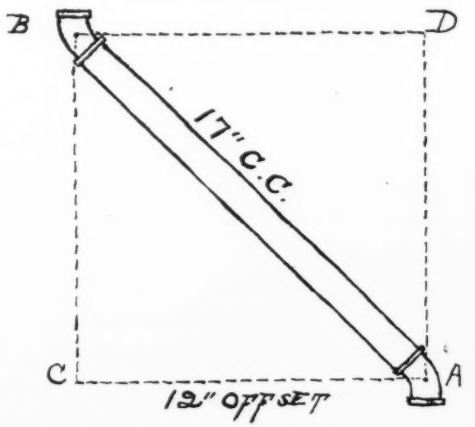


Fig. 4. Tells where the 17 comes from in our rule.

A to B must be 17" center to center of the 45° ells, **and that is where the 17" comes from.**

Any person who will master **this rule,** will find his troubles have disappeared in regard to that confusing problem of 45° measurements.

CONVENTION DATES.

February 8, 9 and 10.—Fourth annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers, at Omaha, Neb. Headquarters at the Rome hotel.

February 10, 1909.—Annual convention of the Florida State Association of Master Plumbers, at Tampa, Fla.

February 15, 1909.—Annual convention of the West Virginia State Association of Master Plumbers, at Clarksburg, W. Va.

February 16 and 17, 1909.—Eighteenth annual convention of the Ohio State Association of Master Plumbers, at Armory Hall, Springfield, O. Headquarters at the Arcade Hotel.

February 17, 1909.—Regular meeting of the Eastern Supply Association, at the Hotel Astor, New York City.

February 24, 1909.—Regular meeting of the Central Supply Association, at the Victoria hotel, corner Michigan avenue and Van Buren street, Chicago.

March 8 and 9, 1909—Annual convention of the Kansas State Association of Master Plumbers, at Kansas City, Kans. Headquarters at the Grand hotel.

May 18-19, 1909.—The fifteenth annual convention of the **Pennsylvania State Association of Master Plumbers,** at Wilkes-Barre.

Illinois Master Plumbers Meet in Peoria

Peoria, Ill., January 20, 1909.—The seventeenth annual convention of the **Illinois Master Plumbers' Association** began a two days' session in the assembly room of the National Hotel today, in this city, with an attendance of over two hundred members and about forty ladies.

Wednesday's Sessions.

The meeting was called to order about 10:30 by **President Wm. J. Lang,** of Chicago.

An invocation by Rev. Father Dolan opened the morning program. This was followed by **an address by J. H. Boyd,** president of the Peoria association.

The Hon. Thomas O'Connor, Peoria's plumber-mayor, was then introduced by President Lang, and, after a few happy preliminary remarks, said: "As mayor of the city of Peoria I welcome you. I have been called upon many times to give addresses before conventions, but I am more pleased to be able to welcome you, since for several years I have followed the occupation of a master-plumber." The mayor said further: "Honesty in organizations is a necessity. Isn't your government a business organization? What is a better plan to follow than the organization of the government? The master plumbers' is as good an organization as there is in the state of Illinois."

President Lang made a fitting response, and short addresses were made by Dan O'Connor, of Peoria, the chairman of the entertainment committee, and C. J. Herbert, of Chicago, representing the national president, W. H. Halsey, who was unable to be present, as he was in attendance at the Wisconsin meeting held in Milwaukee.

A vote of thanks was tendered **Mayor O'Connor** for his sincere and hearty welcome.

The following committees were then appointed:

Credential Committee: W. E. Bouill on, of Lincoln; P. C. Perkinson, of Kewanee, and F. T. Meyers, of Rock Island.

Auditing Committee: T. E. Downey, of Decatur; R. P. Kenny, of Alton, and H. R. Richards, of Hanna City.

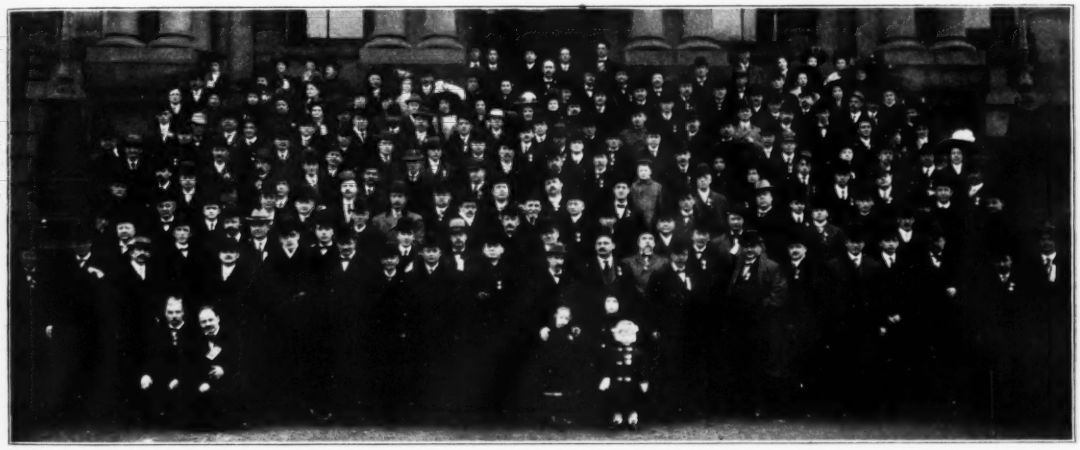
Committee on Resolutions: Wm. Redieske, of Chicago; J. C. English, of East St. Louis; E. J. Ryan, of Danville; J. N. Dougherty, of Danville, and Geo. Karney, of Evanston.

The following named gentlemen comprised the **committee on entertainments:** Dan O'Connor, W. D. Dixon, Samuel Dooley, Andrew O'Neill and E. B. Hazen.

J. J. Ryan, of La Grange, and Andrew O'Neil, of Peoria, were appointed as sergeants-at-arms.

The convention then adjourned until 2 p. m.

The afternoon meeting was passed in a long **executive session** in the transaction of routine business.



Photograph of delegates and visitors present at the seventeenth annual convention of the Illinois Master Plumbers' Association held at Peoria, Ill., January 20-21, 1909.

Thursday Sessions.

The convention was **called to order** at 10 o'clock **by President Lang,** and nearly the entire morning passed in **the revision of the constitution and by-laws,** adjournment occurring at 1 p. m.

The afternoon session assembled at 2:30 and another long **executive session** was held, lasting until nearly 5 o'clock. An **open session** was then held, and **the following officers elected** for the ensuing year:

President, Wm. J. Lang, of Chicago.
First vice-president, J. E. Fitzgerald, of Lake Forest.
Second vice-president, Geo. Poehner, of Joliet.
Treasurer, W. J. Schlegel, of Belleville.

A vote of thanks was extended to the Master Plumbers' Association of Peoria, warmly thanking that organization for its hospitality and the splendid manner in which all were entertained. A resolution was also passed, thanking **W. C. Haviland,** of Aurora, for his efficient services as secretary of the State Association.

By resolution, **Past President Chas. T. Byrne,** of Chicago, was made **an honorary member** of the association.

A vote of thanks was extended to the executive board for their services of the past year.

The convention adjourned at 5:30 p. m.

Delegates in Attendance.

The following is a list of delegates present:

Alton: R. R. Kennedy, Klunk & Heskett.

Aurora: John Divekey, B. P. Kirsch, J. J. Ruddy and John Welch.

Belleville: U. J. Stoltz, Otto Goss and W. J. Schlegel.

Bloomington: J. P. Lowry.

Champaign: J. R. Johnson, W. E. Quirte and E. A. Robinson.

Charleston: John M. White.

Chicago: A. W. Bahn, W. F. Bahn, Thos. Beggs, E. J. Benning, C. J. Boyd, T. C. Boyd, Chas. C. Breyer, Henry Breyer, F. J. Dillenberg, C. A. Dreier, Peter Feltman, P. J. Foley, Wm. Hanrahan, D. J. Hickey, M. L. Mandable, Wm. Redieske, P. Sanders, Jos. Scheuer, Carl J. Stein, E. C. Wagner and W. G. Wood.

WM. J. LANG, OF CHICAGO,
Re-elected President of the Illinois Master Plumbers' Association.

Chicago Heights: J. E. Gibson.

Chillicothe: J. B. Shinn.

Collinsville: Peter Johnson.

Danville: R. Carson, E. A. Mahorney, E. J. Ryan and L. W. Straw.

Decatur: B. C. Adams, T. E. Downing and Fred Schlie.

Delavan: C. E. Stumbaugh.

Earlville: H. Davis.

East St. Louis: John C. English, Jos. P. Heerey, Edw. Metzger and Alphons Stoltz.

Edwardsville: H. H. Keene and R. J. Baird.

Elgin: H. L. E. Peterson and Henry Platt.

El Paso: Ben Hershe.

Evanston: J. J. Cahill, G. A. Kearney, Geo. S. Moore and M. L. O'Malia.

Winnetka: John McKay.

Galesburg: Wm. L. Brogan and Jas. A. McKinney.

Freeport: C. E. Evans.

Geneseo: Jas. Kidney.

Granite City: Archie Boyd, Jr., and R. H. Richards.

Grayville: Geo. Faiszt.

Galva: Frank Dixie.

Hoopeston: A. W. Murray.

Jacksonville: Bernan Gause and E. E. Beastall.

Joliet: W. L. Eriksen, Geo. Poehner and John G. Poehner.

Kewanee: Archibald W. Thorp and B. C. Parkinson.

La Grange: Wm. J. Blaser, Geo. I. Kelly and J. J. Ryan.

Hinsdale: Walter Davidson.

Highland Park: Ernest E. West and W. J. McNanly.

Lake Forest: John O'Leary.

Lincoln: W. E. Bouillon.

Mason City: John L. Robertson.

Mattoon: Gill R. Capen.

Monmouth: J. W. Hays and J. N. Herdman.

Morris: B. C. Hitchcock.

Nauvoo: A. C. Rahn.

Ottawa: J. M. Dougherty.

Peoria: J. H. Boyd, W. D. Dickson, M. S. Hitchcock, Thos. J. McQuellon and Dan O'Connor.

Peru: Wm. A. Schmoeger and Geo. Soedler.

Princeton: N. P. Brood and Everett Love.

Rockford: Edward S. Gregory, W. F. McGuire, F. W. Swords and Geo. B. Smith.

Rock Island: A. M. McNeil, G. W. Reddig and J. W. Ward.

Springfield: W. R. Baker, H. B. McVeigh, J. W. Riffler and L. P. Hopkins.

Streator: Wood Mulford and J. A. Huggins.

Wheaton: W. J. Hilliard and H. H. Putnam.

Convention Notes.

A resolution, introduced by **Mr. J. J. Wade,** of Chicago, was adopted, recommending that **one member of the state board of health be a master plumber.**

A resolution was also passed which recommended that the insurance association of the national body recommend a rate of $1 per $100 for Illinois men outside of Chicago.

The formation of a **ladies' auxiliary** to the state association was also the subject of much discussion, and a proposition regarding the project was placed in the hands of a committee.

I saw his smiling face there, **E. O. Edson,** the organizing secretary of the Iowa Master Plumbers' Association.

M. T. Whitney, of H. Mueller Manufacturing Company, of Decatur, was present with a fine display of

nickel plated specialties and tools, which he took much pleasure in showing the "boys."

Philip Mueller, of the H. Mueller Manufacturing Company, was also present, engaged in earnest conversation with the various members.

H. L. E. Peterson, of Elgin, was on hand, talking about the "Peterson Push Nipple vise," and stated that it was always "as good as it looked."

W. J. SCHLEGEL, OF BELLVILLE, ILL.,
Re-elected Treasurer of the Illinois Master Plumbers' Association.

Adam Cole, with Vaile & Kimes, of Dayton, Ohio, had a water motor pump working overtime in his room.

F. G. Turner, president of the Sanitary Plumbing Supply Company, of East St. Louis, was present, busily engaged in meeting many old friends.

An exceedingly fine photograph of the assemblage was taken from the courthouse steps, which we take great pleasure in reproducing on another page.

The Southern Illinois League from East St. Louis came up, thirty-seven strong, in a special car, with a string band under charge of Jos. P. Heeney, and were much in evidence at the convention.

H. H. Avery, representing the **Quinn Manufacturing Company,** of Kalamazoo, Mich., was kept busy explaining the quick and quiet Quinn quality combinations. Personally Mr. Avery made good on the first feature, but fell down on the latter.

The Peerless Selling Company, of Evansville, Ind., was represented by **H. F. Weaver, its secretary,** and **Harry Snow,** its Illinois and Wisconsin representative and **chief scout.** These gentlemen had their headquarters in a large room adjoining the convention hall, where they had arranged an elegant display of their company's high grade closet combinations and other sanitary earthenware. After the prolonged business sessions their headquarters were a favorite retreat for the delegates, where they were entertained on a lavish scale, different kinds of refreshments being served. The last day of the convention was "Ladies' Day," with them, and nearly all the ladies present were initiated into a new order, whose name has not yet been given out for publication.

Entertainment.

Many were the favorable comments heard on all sides regarding the generous welcome given the visitors by the Peoria association, who allowed few idle or dull moments to be passed, showing to all the utmost courtesy possible.

Theater parties, shopping parties and luncheons for the ladies, an entertainment at the club rooms of Peoria Lodge No. 20, B. P. O. Elks, for the men, followed by a **sumptuous luncheon,** were the means of passing several pleasant hours.

The last evening brought forth **a banquet at the National Hotel,** beginning at 8 o'clock, and followed by the ball.

Chas. H. Denison.

Master plumbers and master steam-fitters are earnestly requested to send us reports of the award of plumbing and heating contracts of $1,000 or more, as soon as these have been awarded, while the information has news value. Kindly address Editor "Domestic Engineering," 49-53 N. Jefferson street, Chicago.

Association News

Brooklyn, N. Y.—The annual entertainment and ball of the Knights of Galena will be held on Monday evening, February 1, at Labor Lyceum, Willoughby and Myrtle avenues.

New York, N. Y.—At the meeting of the executive committee of the New York State Association of Master Plumbers held in this city on January 20 an invitation from the Master Plumbers' Association of Schenectady to hold the next state convention in that city was accepted. The date will be announced later. The executive committee was the guest of the New York City local and was royally entertained during the recesses of the committee.

Cleveland, O.—The Master Plumbers' Association of this city at its meeting last week elected the following officers: **President, Wm. W. Nixon; vice-president, John F. Drees; treasurer, Louis Rumaye; secretary, Eb. Ellen; sergeant-at-arms, D. A. Carroll.** The following comprise the board of directors: Joseph Winterbottom, C. C. Keller, E. H. Benhoff, Frank Hildebrand, Thomas P. McDermott, Jos. M. Keiper, Richard Kohlo, A. J. Kobs, Geo. H. Papworth and Peter Dunn.

Norwich, Conn.—Arthur M. Brown and John Troland, president and secretary, respectively, of the Master Plumbers' Association of Connecticut, are doing some good missionary work along association lines these days, trying to get the master plumbers of their state into the fold, as is evidenced by the following, which is taken from a letter they have just sent to master plumbers in Connecticut: "We again invite you to identify yourself with us and to assist us in the work which we are trying to do for the upbuilding of our craft. We are laboring earnestly at the present time to prepare, and secure at the legislature now in session, the passage of a suitable state law to regulate the practice of plumbing, and your membership would assist us greatly in accomplishing this object. If you should be favorably inclined toward our invitation to become one of us at this time kindly communicate with us, and any information which you may desire will be cheerfully given, and we shall be grateful for any interest which you may display."

Paterson, N. J.—The annual meeting of the Master Plumbers' and Heating Engineers' Mutual Protective Association was held Monday night, January 18, in the Braun building on Market street, and the election of officers for the ensuing year took place. This was the principal business of the evening, and at the conclusion of the session the members repaired to Carlson's restaurant, where they enjoyed a banquet. Tables were set for fifty guests and the menu met with the approval of all, which was made evident by the hearty manner in which they partook of the good things. The elaborate spread was followed by speeches of J. H. White, Robert Quinn, Wm. McKeon and others. The officers elected were: James J. Maher, president; Robert E. Quinn, vice-president; Frank Vreeland, recording secretary; William Delhagen, financial secretary; John Baker, business agent; trustees, Robert Beaumont, William McKeon and John W. Gysbers. There are about one hundred plumbing establishments in this city, and eighty-seven proprietors belong to the association.

Brooklyn Plumbers Enjoy Annual Entertainment.

Brooklyn, N. Y.—Several hundred merrymakers attended the annual entertainment and ball of the Master Plumbers' Association of this city, held on Wednesday evening, January 20. The affair was an enjoyable success in every particular, as all its predecessors have been, but the committee in charge this year resolved to surpass all previous records, and the result of their efforts was most gratifying. The new Academy of Music was selected for the occasion, and this fact alone brought a number of new faces to the scene, curious to inspect the new building, which is the handsomest of its kind in the city.

A good entertainment program of several numbers kept the audience in laughter for upward of three hours in the Music Room, after which the doors of the beautiful reception hall were opened for the final number of the evening's enjoyment. A feature of the function was the unexpected **presentation of a handsome silver loving cup to Ex-President Thomas F. O'Brien.** The presentation was made during the entertainment, and came as a complete surprise to Mr. O'Brien. The cup stands about twelve inches high and bears the following inscription: "Presented by the Master Plumbers' Association of Brooklyn to Thomas F. O'Brien in recognition of services as president during the years 1907 and 1908."

President James Meeks lead the grand march. This over the plumbers and their friends enjoyed some two dozen dances until the wee hours. Then the "taxies" did the rest.

The association had as guests: State President Frank L. Beyer and State Secretary John J. Kavany, of Buffalo; National State Vice-President Chas. A. Campbell, of Watertown; L. F. Bannon, of Kingston; F. E. Fladd, president of the Rochester association, and B. Joseph O'Donnell, of Syracuse, who were in the city to attend a meeting of the State Executive Board held on that day. T. S. Cochrane, Jr., William Thompson, of the Wm. Vail Company, and Morris Jarcho, of the Manhattan association, also graced the occasion. The affair will go into history as the most successful social function of the Brooklyn association and rightly so, thanks to the arrangement committee, who exhausted every effort to make it an evening of enjoyment for everyone. S. J. Corcoran was floor manager and directed every feature of the reception with the art of a master.

The committee in charge of the arrangements was composed of: James Meeks, chairman; Thos. F. O'Brien, William Eirmann, William Brown, John Dixon, S. J. Corcoran and William Crane.

Albany Master Plumbers Honor Frank L. Beyer, President of the New York State Association.

Albany, N. Y.—The Master Plumbers' Association of this city gave its annual reception and dinner at The Ten Eyck on Thursday evening, January 21, this year **in honor of Frank L. Beyer,** of Buffalo, N. Y., president of the New York State Association of Master Plumbers.

There were some one hundred and fifty guests present at the affair, and as they filed into the banquet room at 8:30 o'clock they found much preparation had been made for their coming. The decorations were extremely beautiful and the electrical effects pleasing, every detail reflecting credit on those who were responsible for the artistic arrangement.

Behind the speakers' table was the insignia of the local association done in red and white lights. About the room there were other handsome decorations of flags.

Many ladies, the wives, daughters and friends of the members and guests, graced the galleries of the banquet hall and were served during the evening with all the good things on the menu. The ladies were quick to acknowledge with their applause and waving of handkerchiefs everything said by the speakers which appealed to them, and added much to the evening's entertainment.

President Thomas F. Nolan, of the association, in introducing the toastmaster of the evening, **John H. Moran,** sketched briefly the history of the association. He showed that progress had been made in Albany and gave a few figures to back up his assertion. He showed that 400 new houses had been built here in a

year and that 486 plans had been approved. There had been 350 additions to old buildings and 350 new open piazzas built. There had been 4,000 inspections of plumbing and 5,500 fixtures installed. The health bureau had issued 2,500 permits, and 500 heating plants had been installed during the year.

The toastmaster made a short speech and introduced **John E. Dugan, a former president of the association,** and one who has been honored by the state and national organizations. He responded to the toast, "Our

FRANK L. BEYER, OF BUFFALO,
President of the New York State Association of Master Plumbers, who was guest of honor at the annual reception and dinner of the Albany Master Plumbers' Association, held January 20, 1909.

Guests," and brought in all of the distinguished ones present.

Mayor Snyder made a hit with his speech. He told the plumbers that for a long time they had advocated a building board with an inspector in the city, and he promised them that before the year was out they should have such a board. He also declared that he stood for the enforcement of the statutes as found on the books today.

Former National President T. A. Hill, of New York, toasted "The Ladies," and he made a most graceful address. **Attorney-General Edward R. O'Malley,** of Buffalo, responded to the toast, "The Empire State." He declared that the plumber's business was one that was not understood by the majority of citizens. For years the plumbers had been trying to obtain the object of having a member on the state health board, and he assured them that all he could do toward this end he would do cheerfully.

The next speaker was **State President Beyer,** who made a most finished address. He had a word of commendation for the record that the local association had made. He confined his remarks to his topic, "The New York State Association," and indicated clearly that he had his subject well in hand. This closed the regular toast list, although a few informal addresses followed.

The association was greatly indebted to **David M. Kinnear** for the original songs he contributed that enlivened the dinner. One of his best was "Nolan's Dream of the M. P. A.," which referred to many of the well known members of the city and state association. It was written to the air of "My Dream of the U. S. A.," and was the hit of the evening. Other parodies on popular songs were, "Plumbers' Big Night" and "Auld Lange Syne" The latter song was the closing of the evening's enjoyment that passed into history as one of the most enjoyable ever held by the association.

Plumbing Inspection

Mlwaukee, Wis.—George E. Stoltz, plumbing inspector of this city, has been appointed to represent the municipality at the annual convention of the American Society Inspectors of Plumbing and Sanitary Engineers at Omaha, Neb., on February 8 to 10. He goes at the expense of the city on recommendation of the committee on water works of the common council, which body believes that much valuable information can be gained at the convention.

Omaha, Neb.—Arrangements for the fourth annual meeting of the **American Society of Inspectors of Plumbing and Sanitary Engineers,** February 8, 9 and 10, 1909, are progressing favorably. The headquarters are at the Rome Hotel. Reservations for hotel rooms and further information should be addressed to Mr. Harry McVea, inspector of plumbing, Omaha, Neb. A number of papers of unusual interest have been promised, and the convention promises to be an unqualified success.

Peoria, Ill.—E. H. Donahoe, of this city, was elected president and secretary of the State Board of Examiners of Plumbers at the meeting held in the city hall in this city on Tuesday, January 19. J. J. Ruddy, of Aurora, was chosen treasurer. About thirty-five members were present and heard the first report of the president, Mr. Donahoe, in which he related the organization of the state board and gave a thorough explanation of its purposes, as well as the work already completed, the substance of which is as follows: "The state board of examining plumbers was organized in Chicago in February, 1905, the cities of Chicago, Peoria, Springfield, Joliet, Danville, Rockford, Rock Island and Moline. The state law of plumbing was taken up and an amendment providing for the licensing of plumbers and supervising and inspecting of plumbing was recommended, which was introduced by Hon. Richard J. Barr, of Joliet. The amendment was passed in March, 1905, requiring that all cities of over 10,000 inhabitants have a board of examiners, made up

of the city health officer, one journeyman and one master plumber. Since that time other cities have joined until the number now stands at eighteen, although several of the cities of importance have taken no heed of the efforts of the board or the state law." The following cities have examining boards: Chicago, Peoria, Rock Island, Moline, Springfield, Danville, Rockford, Joliet, Evanston, Ottawa, Bloomington, Galesburg, East St. Louis, Streator, Aurora, Elgin, Champaign, Freeport.

Wholesale Plumbing

Nechankus-Papkin Company, of New York, N. Y., has been incorporated with a capital of $1,000, to manufacture plumbing specialties. The incorporators are A. F. Hamovitz, Peter Nechankus, of 124 East 103rd street, and Jos. Papkin, all of New York City.

Humphrey Company, of Kalamazoo, Mich., has opened a sales branch at 1125 Prospect street, Cleveland, Ohio, in charge of Dick D. Reed, formerly traveling representative for the company, and covering Illinois, Wisconsin, Missouri, Iowa and Minnesota. The Humphrey Company also announces that Walter F. Fairbairn, who for the past seven years has covered Michigan, Ohio, Indiana, West Virginia and Northern Kentucky in its interest, will hereafter devote his entire time to Ohio and West Virginia.

Whitney & Ford, of Chicago, are now occupying their new building at 4325-29 Cottage Grove avenue. A heating department has been added to their regular plumbing line, in charge of an experienced heating man. This building was constructed especially for the plumbing and heating supply business, and possesses some unique features, such as an especially designed pipe house and a very attractive exhibit room. These new quarters will give the firm excellent facilities for serving their out-of-town and local customers, all of whom they cordially invite to visit them and "be shown."

Ellsworth F. Hayden has resigned his position as traveling representative of the Geo. E. Gilchrist Company, of Boston, Mass., and associated himself with the Smith & Abbott Company, of Portland, Me. Mr. Hayden is well known to the plumbing and heating trade in Maine, having been Maine representative for the Geo. E. Gilchrist Company for the last four years, and having previously served the Sumner & Goodwin Company in the same capacity for a number of years. The Smith & Abbott Company, with which he now links his fortunes, is a comparatively new jobber in plumbing, heating and gasfitting supplies. The company's officers are: Stephen F. Seavey, president, and Wm. H. Goodwin, treasurer.

The Columbus Brass Company, of Columbus, Ohio, is making arrangements for the third annual ramble of its customers, which will consist of a trip to New Orleans, February 20 to 25, taking in the famous Mardi Gras. The Pennsylvania lines and the Queen & Crescent route have been selected to run a special train of Pullman sleepers and dining cars, to leave the Union Station, Columbus, Saturday, February 20, 1909. The special will traverse the Ohio valley to Cincinnati, thence through the famous "Blue Grass" country and through Tennessee to Chattanooga, where the train passes around the base of the mountain, giving a view of Hooker's battle ground. The run continues southward to Birmingham, the Pittsburg of the south, and thence over Lake Pontchartrain to New Orleans, full of many instructive sights and historical associations. The Mardi Gras was first started in 1827 by a crowd of Creole students who had just returned from Paris. In 1856 Mistick Krewe of Comus was organized, and Mardi Gras, which means "Fat Tuesday," the day before "Ash Wednesday." Their parades and merrymaking have continued ever since.

Wholesale Heating

The Wycoff-Lloyd Company, of Springfield, Mass., has moved its establishment from Lyman street to the new Myrick building on Worthington street, where it occupies a large store.

The Cobb Boiler and Manufacturing Company, of New York City, was recently incorporated, with a capital of $50,000, to manufacture boilers, hot water heating apparatus and plumbing specialties. The incorporators are H. M. Browne, F. W. Mills, E. J. Forhan, all of New York City.

S. D. Hopkins, for some years manager of the Crane Company's branch at Philadelphia, resigned last Saturday to become assistant secretary of Hunter & Dickson Company, 241-245 Arch street, Philadelphia. E. H. Raymond, local manager of Crane Company's branch at Baltimore, has followed Mr. Hopkins as Philadelphia manager.

As reported in this column some time ago, the supply business of the Frank Prox Company at Terre Haute, Ind., has been purchased by the Crane Company, of Chicago, and formal announcement of this fact has just been made this week by the Crane Company, which states that the business will be continued at the same location, Ninth and Mulberry streets, Terre Haute. A complete stock of plumbing, heating and mill supplies will be carried and R. A. MacGill will be in charge of the branch. The Frank Prox Company retains the manufacturing part of its business and will continue the production of heating boilers and heating supplies as announced at the time of the sale.

A fold of the United Bunch of Sheep, the social order of plumbing and heating supply salesmen, which was organized in Milwaukee about two years ago, will be established in Chicago. Andrew P. Pease, of Chicago, has been appointed organizer for that city. This action was taken at the annual banquet and meeting held in Milwaukee, at which the following officers were elected for the ensuing year: Grand Ram, David W. Johnson, Milwaukee; Grand Vice Ram, N. D. Garnsey, Madison, Wis.; Chief Shearer, James Brady, Milwaukee; Grand Keeper of the Fleece, L. M. Kornreich, Milwaukee. James T. Ketchum, of the United State Heater Co. of Detroit, is national organizer.

What It Amounted To.

"I want you to give me some advice," said the somewhat tedious person.

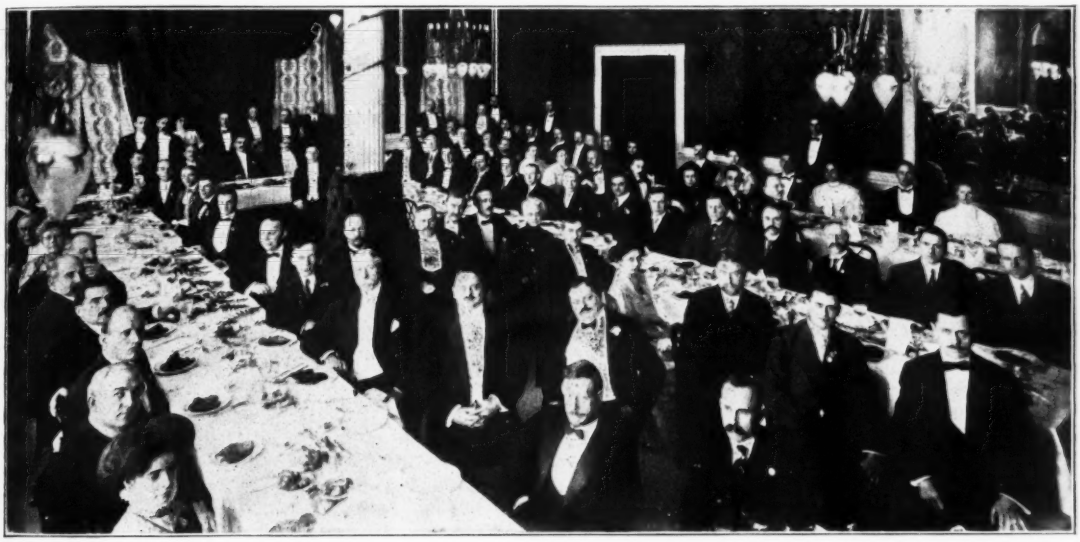
"No, you don't," answered Mr. Sirius Barker. "You've got a little spare time and you want to make conversation."—Washington Star.

Steam and Mill Supplies

The Hill Valve Co., of Neenah, Wis., has been incorporated with a capital stock of $100,000. The incorporators are Joseph E. Hill, William M. and Theodore Gilbert.

W. H. Wiggs, proprietor of the Mechanics Supply Company, Quebec, Ontario, on Saturday afternoon, January 9, celebrated the twentieth anniversary of the foundation of his successful business with a reception at his modern establishment. Several hundred ladies and gentlemen, including the leading people of his city, attended the pleasant affair. A musical program was rendered and refreshments were served throughout the afternoon.

J. W. Curtis, manager of the Norwich plant of the McCrum-Howell Company, of New York, N. Y., where he may usually be found enthusiastically engaged in directing the course of pig iron from its arrival till it leaves as finished steam and hot water boilers and furnaces, attended the meeting of the American Society of Heating and Ventilating Engineers in New York last week, in company with **Howard T. Gates,** secretary, salesmanager, special minister, and general scout of



The annual banquet of the American Society of Heating and Ventilating Engineers, held at the New Grand Hotel in New York City, on Wednesday evening, January 20, in connection with the fifteenth annual meeting of the society. From photograph by Drucker & Company, New York.

Hobbs-Ivey Machinery and Equipment Company, (Inc.), of Norfolk, Va., has been organized with a capital of $25,000 to conduct a machinery and mill supply business. The officers of the company are: T. B. Ives, president; L. F. Hobbs, secretary; M. A. Hobbs, treasurer, all of Norfolk, Va.

Personal

A. F. Lockhart, of the Lockhart Company, of Moline, Ill., is at present on a trip to Kansas City, Mo., on which he combines business with pleasure.

Harry Snow, of the Peerless Selling Company, Evansville, Ind., was in Chicago this week, and looked up some of his many acquaintances in the trade.

G. Schumacher, of the Union Foundry Company, of Anniston, Ala., was in Chicago in the early part of this week, calling on a few of his many friends in the trade.

Robert K. Story, of Story & Beach, 150 Nassau street, New York City, sales agents for the U. S. Sanitary Manufacturing Company and other firms, had the misfortune to slip on the ice, on the brick pavement in North Philadelphia on Friday January 22. He suffered injuries to his right leg and is confined to his home in Brooklyn, and not expected to be about for several weeks.

that company. If the "never-come-off" brand of smile each was wearing may be accepted as a criterion, the diplomatic relations of the company with the trade are in a gratifying state of serenity.

Miss Emma Zurn, "right-hand man" to her brother, John E. Zurn, who is "the power behind the throne" in the affairs of the Advance Manufacturing Company of Erie, Pa., and who occasionally assumes the role of commercial scout for that company, has been spending the past few weeks in New York and Brooklyn, giving the plumbing supply men of the Big Town a lifelike impersonation of the "lady drummer" and decorating the pages of her order book with their orders for plumbing specialties manufactured by her company.

Not Flattery.

"I wonder why you love me, dear?"

"That's strange. I've asked myself the same question a thousand times."—Cleveland Plain Dealer.

Metal Market

New York Metal Market, January 26.

Copper, Prime Lake	$14.25
Copper, Lake, Arsenical brands	14.00
Copper, Electrolytic	13.87½
Antimony, Cookson's	8.10
Lead	4.17½
Straits Tin	27.85
Spelter	5.15

Chicago Iron Market, January 28.

Southern, No. 2 Foundry	$17.35
Northern, No. 2 Foundry	17.00
Lake Superior Charcoal	19.50-20.00

January 28, 1909:

Foundry iron was the same price as the week previous
$2.50 less per ton than the year previous
Copper was the same price as the month previous
½c more a lb. than the year previous

New York, N. Y.—The whole iron and steel trade is dull, and, while it is recognized that January is usually a dull month, there is keen disappointment at the manner in which new business has flattened out, says The Iron Age. Pending tariff revision usually is assigned as the principal cause, but there are many who attach less importance to it as a factor, and this feeling seems to be more prevalent farther west. It is the uncertainty in regard to prices for finished iron and steel which is regarded as a potent drag. While the concessions are not large, they seem to be growing more general, and are having a moral effect which is unsettling. They are shaking confidence in co-operation among the leading manufacturers, and are raising the specter of a price war. The pig iron markets are quiet, with a tendency to weakness. Some smaller furnace interests are offering metal at concessions varying from 25c to 50c a ton.

Obituary

James H. Kenealy, of the plumbing firm of Murphy & Kenealy, at Sacramento, Cal., passed on at his home in that city last week.

Oscar Riley, senior member of the plumbing firm of Riley & Wenger, at Monroe, Wis., passed on suddenly of heart disease last week. He was born in Green county, Wis., fifty-three years ago.

Harry Rowe, of Brattleboro, Vt., master plumber, musician and veteran of the civil war passed on at his home in that city on Sunday, January 17, in his 73rd year. He had been in failing health for years but had only been confined to his bed for a week previous to his demise. Mr. Rowe was born in Bethel, Vt., in 1836, and spent his early life there learning the tinsmithing and plumbing trade. He came to Brattleboro twenty-seven years ago and for a number of years was employed as a pipe fitter in a local establishment and finally established a business of his own. He was a member of the masonic fraternity. His wife died five years ago.

Joseph McWilliams, president of the well known firm of Joseph McWilliams & Company, of Louisville, Ky., and who was one of the most prominent men of the city, passed on during the night of January 20, at the Norton Infirmary in that city. Mr. McWilliams was in his forty-fourth year. He was a member of the Elks, Knights of Columbus, Louisville Board of Trade, the Employers' Association and Manufacturers' Association. For a number of years Mr. McWilliams was president of the firm of Joseph McWilliams & Company, one of the best known electrical supply and heating houses in the south. Among the large contracts recently made by his firm was one for putting up the heating and lighting plants for the new Capitol building at Frankfort, Ky.

Financial Trouble

New York, N. Y.—Two petitions in bankruptcy have been filed against Henry Newbury, dealer in plumbers' specialties, who did business as H. Newbury & Company, at 1660 Park avenue. The assets are estimated at from $7,000 to $8,000.

Portland, Ore.—T. M. Johnson, who conducted business under the name of the T. H. Johnson Company, has made an assignment in favor of H. K. Sargent. Liabilities about $5,000; assets comprising the business, several contracts and the shop equipment.

Macon, Ga.—G. W. Warner, proprietor of the Warner Electric and Plumbing Company, of this city, has filed a petition in bankruptcy in the United States District Court. Total liabilities aggregate $1,628.39; assets, real estate valued at $1,000 and $1,270 personal property.

Contemplated Work

Washington, D. C.—Sealed proposals will be received at the office of the supervising architect until 3 o'clock p. m. on March 1, 1909, for the construction of the United States postoffice at Gadsden, Ala., in accordance with the drawings and specification.

Washington, D. C.—Sealed proposals will be received at the office of the supervising architect until 3 o'clock p. m. March 3, 1909, for the construction complete (except elevator) of an extension to the United States postoffice, court house, etc., at Augusta, Maine, in accordance with the drawings and specification.

Washington, D. C.—Sealed proposals will be received at the office of the supervising architect until 3 o'clock p. m. February 23, 1909, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring) of the United States postoffice and court house at Roanoke, Virginia, in accordance with drawings and specification.

La Fayette, Ind.—The contract for the plumbing, sewerage systems and heating plant for the new Victoria theater has been awarded to the Wallace Brothers Company, of La Fayette, Ind.

Saginaw, Mich.—The Eureka Heating and Ventilating Company, of this place, has recently been awarded the contract for placing a steam system in the new Nineteenth Ward hose house in this city, and among their various other contracts are heating and ventilating the addition to the Greenville (Mich.) high school, and will at the close of the school year remodel the heating system in the old building of the same school.

Boston and New England

Teryville, Conn.—J. F. Ryan has opened a plumbing shop in the Berger block on Main street.

Attleboro, Mass.—Raymond C. Riley, steamfitter, has filed a petition in bankruptcy. He owes $1,106 and has no assets.

Marlboro, Mass.—G. R. Hall & Co. have been given the contract for plumbing the Douglass Shoe Factory. It will all be done by day work.

Winsted, Conn.—J. H. Alvord, who conducts a plumbing business on Main street, is having his quarters enlarged and renovated.

Plymouth, Mass.—A branch of the Plymouth Hardware Co. has been established in Sagamore, Mass., where plumbing will be done in connection with the hardware business.

New Britain, Conn.—P. J. Tornay has moved his plumbing business from 127 Church street to 42 Clark street, where he has much larger quarters and better facilities for caring for the interests of his many customers.

Fall River, Mass.—John F. Johnson Company has the contract for heating and ventilating the new Bristol county second district court building here and also for heating and ventilating the new Bristol registry of Deeds building at New Bedford, both of which are large contracts.

Plymouth, Mass.—William W. Myrick and John I. Drew have started for Welland, Ontario, where they will be engaged for a month or more in installing heating plants in several houses belonging to the Plymouth Cordage Company and which are to be occupied by the company employes.

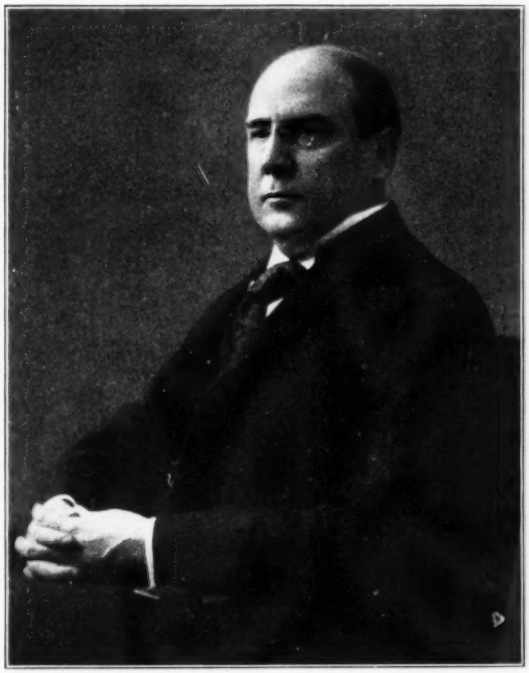
Noank, Conn.—The plumbing shop of Smith & Barry, which was recently moved from Front street to Water street, and which has undergone extensive repairs, is now completed and presents a fine appearance. The upper portion of the building has been fitted up as a tenement with all modern conveniences.

Boston, Mass.—Representative Hosmer, of Amherst, has presented to the legislature a petition asking an appropriation of $171,105 for the State Agricultural College at Amherst. Of this $40,000 is asked for improvements to present building, including an extension of the heating system.

Melrose, Mass.—The plumbing establishments of P. M. Grovestein and Brock Brothers, located in the Boardman block, were damaged by fire on the night of January 18. The fire originated in the basement of the Grovestein place from spontaneous combustion, but was discovered in time to prevent a serious conflagration by a workman who chanced to be on duty overtime.

Springfield, Mass.—Albert Stoddard, a local plumber, believes that he is one of sixteen heirs to the property of a late Scotch lord who when he died left upward of $10,000,000. The estate consists of Montgomery Castle, near Glasgow with all its adjoining lands and buildings. Albert Stoddard's brother Archibald, of Rochester, N. H., is going across to look the matter up for his relatives here.

Who's Who in America—VIII



Albert Sanders Hills, treasurer and vice-president of The Haydenville Company, of Haydenville, Mass., was born in that city October 10, 1859, and obtained his education in the public schools of Skinnerville and Haydenville, and in the Williston Seminary at Easthampton, Mass., graduating with honor from its post-graduate course in June, 1879. While studying at the seminary Mr. Hills held many honorable offices, such as senior editor of the "Seminary Mirror," president of the literary and debating society "Gamma Sigma," and assistant captain of the baseball nine, on which team he was a prominent player. His business career began in 1876 and 1877, when he spent some months with Hayden, Gere & Company, of Haydenville, Mass. After having put the finishing touches to his education, as above recorded, he entered the employ of the E. Stebbins Mfg. Company, of Springfield, Mass., in 1879, remaining there until 1884, when he formed a partnership under the name of Hills & Lewis and started in business at Philadelphia. In 1885 Mr. Hills purchased the interest of his partner and conducted it under his own name until 1887, when it was changed to A. S. Hills & Company, Ltd., under which style he did business until 1895, when he again joined the forces of the E. Stebbins Mfg. Company, at Springfield, Mass., remaining with this concern until 1898. In 1899, just ten years ago, he became connected with the Haydenville Company, of Haydenville, Mass., of which he is now treasurer and vice-president. Mr. Hills is president of the Metal Workers' Club, which is the national organization of manufacturers of plumbers' brass goods, and he takes an active and prominent part in local civic and educational affairs, being chairman of the town water works department and of the town's school committee. He is also interested in church work, being a Congregationalist and a director of the Northampton Young Men's Christian Association. He is unmarried. His father, Jacob Hills, was for many years chief designer and inspector for Hayden, Gere & Company and inventor of the J. Hills compression work.

Lowell, Mass.—The Scott & O'Day Co. has been awarded the contract for the plumbing and gas piping in the new church which is being erected in Wigginville.

Worcester, Mass.—Among the recent plumbing contracts reported are the following: Tucker & Rice, dwelling house at 12 Humboldt avenue, owned by E. C. L. Morse; dwelling house at 12 Haviland street, owned by Dr. Bieberbach; dwelling house at 6 Franconia street, owned by H. C. Fisher; J. J. Lawler, dwelling house at 29 Kosta street, owned by J. Forsman; A. E. McDonald, tenement house on Marsh avenue, owned by O. R. Norquist; J. W. Jordan Co., tenement house at 67 Lafayette street, owned by V. B. Draniewiecz; Thomas J. McManus, dwelling house at 62 Mulberry street, owned by Rev. Father Maffei; tenement house at 1290 Main street, owned by P. Gallagher.

Great Barrington, Mass.—John Lahey and Allyn Stillman, who for a number of years past have been doing a plumbing business under the firm name of Lahey & Co., have decided to liquidate and will probably later dissolve partnership. For this reason they have assigned their book accounts to H. M. Whiting and he will wind up the affairs of the company. During the pendency of the settlement Messrs. Lahey and Stillman will continue their usual work and it is expected that the finishing of present contracts, the doing of new work and the general activities of the business will not be interrupted and that whichever one decides to continue the business will find it in good flourishing condition.

News from the State of Maine

Oldtown, Me.—A. P. Steward has recently opened a plumbing and heating shop here.

Foxcroft, Me.—B. A. Thomas has just started work on the plumbing in the K. of P. hall.

Gardiner, Me.—Kelley & Wheeler have the heating and plumbing in Mayor Atkin's residence nicely under way.

Kennebunk Port, Me.—John F. Jackson has just secured the contract for the plumbing work in the summer home of Dr. Leary at Goose Rocks.

Oldtown, Me.—Blanchard & Burdeene have just finished the plumbing in the Enterprise block. Mr. Burdeene is expecting a busy season along the plumbing line.

Kennebunk, Me.—A. E. Littlefield, who has charge of the plumbing end of the H. E. Lunge Company, is at work on the plumbing contract in the residence of Philip Andrews.

Lewiston, Me.—A. Dulac Company has the contract for plumbing to be installed in the apartment house owned by Amil Johns. There will be twelve complete bathrooms in the house.

Dover, Me.—John H. Shea has recently opened a plumbing and heating shop on Union square, and is desirous of receiving price lists and catalogues from manufacturers and jobbers.

Bangor, Me.—The Babb Plumbing and Heating Company has landed the plumbing and heating work in the Colonial House. The heating is to be a patent Modulating system to the tune of about 7,000 feet. There are some sixty complete bath rooms in the building.

Portland, Me.—Miles O'Sullivan is installing fifteen bath rooms and twelve extra lavatories in the West End Hotel. Miles is looking forward to a very busy season in the plumbing business.

Oldtown, Me.—Fred Sparks has opened a plumbing and heating shop, and reports business good up to date. He is desirous of receiving price lists and catalogues from manufacturers and jobbers.

Biddeford, Me.—James W. Wood reports a very busy season, and has some very good work under way. He is installing the plumbing and also a sprinkler system in Hotel Tannersau at Fortunes Rocks.

So. Portland, Me.—F. W. Huntress, of 446 Preble street, is busy on the plumbing work in the apartment house owned by Chas. M. Cole. He has the contract for the plumbing in eight cottages at So. Portland.

Biddeford, Me.—Hotte & Lemieux are just putting things to rights in their new shop and preparing for a busy season. They are desirous of receiving price lists and catalogues along plumbing and heating lines.

Lewiston, Me.—The Guilmet Company has landed the plumbing, heating and gas work for the Dominican Fathers' Club House. The building will be one of the best of its class in this section, costing about $25,000.

Biddeford, Me.—A. W. Varnille is just starting the plumbing work in the residence of Frank A. Googus on Main street. Mr. Varville has the roughing-in for the plumbing on the Hanaway tenement house nearly complete.

Lisbrud Falls, Me.—John M. Beal has opened a plumbing and heating establishment here. John is going to bite it off in big chunks just as soon as the weather opens up. A specialty will be made of high pressure and power work.

Lewiston, Me.—J. H. Stetson Company is just starting work on their heating and plumbing contract in the L. A. & W. V. station and general office building. The company has a number of large contracts under way, and is forced to work nights and Sundays.

Bar Harbor, Me.—Frank Young is one of the busy plumbers in town this winter. He is just starting the plumbing work in the summer home of W. G. Ladd. There are nine bath rooms complete and two toilets. He has twenty-two residence jobs under way in the city.

Augusta, Me.—J. H. Cogan & Company have started work on the $10,000 heating, ventilating and plumbing contract in the new Corry high school. Mr. Cogan is a very busy man along plumbing and heating lines this winter. If things keep on coming Cogan's way it is a question as to whether he will be able to be a rooter at every one of the plumbers' ball games this season.

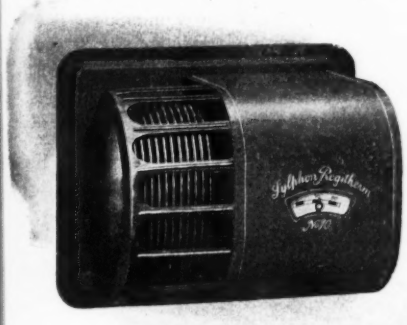
O. T. Carson.

Redd: "Is he a good loser?"

Greene: "Oh my, yes! Why, he's had a dozen chances to get married and he's still a bachelor. See how happy he is!"—Yonkers Statesman.

Heating Specialties.

Many heating contractors have found that by displaying a well selected assortment of heating specialties, such as Norwall Vacuum and Air Valves, Ideal Sylphon Regitherm, Sylphon Regulators for Steam, and Water Boilers and Tank Heaters, Ideal Radiator Shields, Brushes, Bronzes, Enamels, etc., the goods sell themselves. Most houseowners like to keep their heating equipment up to date and buy many of the specialties on sight.



Ideal Sylphon Regitherm—a popular and efficient specialty.

The sale of goods which require no selling arguments take up little show room space and add to the houseowner's satisfaction in his heating outfit should prove desirable to the heating contractor. The demand for Ideal heating specialties is greater each year.

AMERICAN & IDEAL
RADIATORS & BOILERS

AMERICAN RADIATOR COMPANY

General Offices, 282-286 Michigan Ave., Chicago.

New York	Cincinnati	Cleveland	Atlanta	Brantford, Ont.	Denver
Philadelphia	Boston	Milwaukee	Minneapolis	Seattle	St. Louis
Pittsburg	Buffalo	Indianapolis	Kansas City	Omaha	San Francisco

Editorial

Concluded from page 121

in some markets, with the knowledge and consent of the makers, containing sand or pin holes, uneven castings with ⅜ thick one side and ⅛ thick on the other; with rough projecting edges or accumulations of slag on the inside of the pipe or fitting; make of inferior material and not nearly the proper weight? These later break out, causing a loss to the plumber. Or, if installed, they leak into the ground, causing water in the cellar. Obstructions are caused because of roughness, and if these defective pipes are used as stacks they emit sewer gas into the house.

* * *

Is there anyone who can guess the amount of second and third grade defective stuff sold annually, to defraud the public?

We ask, is it not time for action by the American Society and co-operation by the respectable manufacturing firms and inspectors of plumbing throughout the country?

Pacific Coast

Spokane, Wash.—The Hankins Plumbing Company of this city was burned out recently.

Black Diamond, Cal.—A. V. McFane has acquired an interest in the plumbing business of C. H. Powell.

Redlands, Cal.—The plumbing firm of Fisher & Norris has been dissolved, and R. E. Norris will continue the business.

Klamath Falls, Ore.—The plumbing firm of Greeley & Phillips, of this city, has been dissolved, and C. E. Greeley will continue the business.

Merced, Cal.—The plumbing firms of Garibaldi & Vincent and A. H. Murray of this city have been merged into one and incorporated under the name of the Murray-Vincent Co., Inc.

Porterville, Cal.—Miller & Porter, of 120 South Main street, have secured the following plumbing contracts in Coalinga: A. E. Webb's two-story block, $1,250, and his two-story residence, $1,025; also two bungalows and two cottages.

San Francisco, Cal.—O'Brien Bros., architects, have just completed plans for a new building to be erected on Pine street near Jones. Thirty bathrooms will be in the structure and bids are now being invited for the plumbing work.

San Francisco, Cal.—The Board of Public Works has just let an important contract to John G. Sutton & Company for the ventilating system in the South End Primary School building, for $10,014. The plumbing and gas-fitting work in the same building will be done by J. E. O'Mara for $4,795.

Los Angeles, Cal.—N. F. Bower, of 221 East Twenty-fourth street, has secured the contract for the plumbing and heating in W. E. Curry's new apartment building at 925 South Alvarado street. The consideration is $8,500. Mr. Bower has just completed the plumbing and gas fitting work in the Adams apartment on South Grand avenue, a $6,000 job.

San Francisco, Cal.—John G. Sutton & Company has secured the contract this week for the installation of a steam-heating plant in the Shields building in course of erection at the corner of Stockton and O'Farrell streets. The American Air Cleaning Company secured the contract for installing a vacuum cleaning outfit in the same building, and this will be installed within a month's time.

San Francisco, Cal.—Work on the Y. M. C. A. building on Golden Gate avenue has commenced and will be hurried through to completion as the institution is in need of the structure. A large amount of plumbing work will be done here as both a plunge and shower bath will be installed. An engine room and heating plant will be a feature of the completed building.

San Francisco, Cal.—Among the bills introduced at the State Legislature just opened at Sacramento is one for a heating and power station to be established at the Preston School of Industry. Other work that is being planned by the State and which will contain a large amount of plumbing is a State Industrial School at San Francisco to cost $500,000, a State Armory and Arsenal at Los Angeles to cost $250,000; Agnews State Hospital, $125,000, a hospital at the Soldiers' Home at Yountville, $65,000, and repair work for nearly all the State institutions.

San Francisco, Cal.—The firms having the work of installing the concrete cisterns for the auxiliary fire protection system are making rapid progress and several of the cisterns are now well along towards completion. Now that the money for the purchase of pipe and valves is at the disposal of the Board of Public Works, it is thought that it will not be long before the contracts for the pipe is let, and actual construction of the distributing system commenced. A similar system is planned for Oakland and the pumps have just been accepted.

San Francisco, Cal.—A visit among the waterfront plumbers, discloses the fact that these plumbers are very busy at the present time on ship work. Many vessels have been laid up here for the past year owing to the fact that the shipping business was so badly depressed by the financial disturbance, but of late there has been a call for vessels, and these are now being placed into condition again for service. Many of them are also being converted into oilburners and most of this work is done by plumbers as some of the most important kinds of oil-burning apparatus are controlled by them.

San Francisco, Cal.—There has been but little work in the plumbing line done in this or any other coast city during the past week. A rain storm of unusual violence has been raging all along the coast and construction work of all kinds is at a standstill. In some sections of California, and especially in the Sacramento valley, floods have followed the storm, and there has been considerable loss of property from this source. Several small towns have been inundated, and some of the large cities, such as Sacramento and Stockton, are now threatened, but so far the damage done amounts to but little as compared with the benefits that will ensue. Up to the commencement of the year

there had been but little rain anywhere in the state and there was talk of a drought. Now, however, all such talk has been dispelled, and not only is it a settled fact that there will be heavy crops in this state as far as the moisture question is concerned, but the underground reservoirs have been filled by the bounteous downpour to such an extent that crops can be raised another year without much rainfall. This satisfactory condition of affairs is very pleasing to plumbers, and already jobbers are commencing to feel the beneficial effects of the rain. Orders from country towns which had been held up pending a change in prospects have been sent in to be filled, and within a short time a heavy business will be transacted with country plumbers. At the present time jobbers are experiencing great difficulty in securing supplies from the east, but most of them are fairly well supplied with goods, and it is expected that it will be a matter of a few days until transportation facilities are improved to such an extent that freight will be moving with its usual winter speed. Just at present freight for certain districts of the state is being refused by the railroads, but as soon as the flooded condition of the river and mountain towns is over the temporary blockade will be broken.

San Francisco, Cal.—Many plumbers have been laid off here during the progress of the storm, but still there was considerable work in partly completed buildings that could be done. Work went on as usual in the Palace Hotel building, and a number of plumbers are now busy there. A large shipment of bath tubs has been received and are now in the building ready to be installed. There is a desire on the part of the management to have this plumbing work completed at as early a date as possible, in order that the decorators will have ample time in which to finish their work before the opening date. W. S. Snook & Son can be depended upon to rush this work as fast as it is wanted, and promise that the plumbing will be completed on time. Another building upon which work is being rushed is the one to be occupied by I. Magnin & Company, at the corner of Geary street and Grant avenue. So anxious is this firm to have the building completed at an early date that a premium is being offered for rapid construction, and both a day and a night shift is at work here.

With the Makers

The Bay State Brass Company, whose executive offices are at 150 Nassau street, New York, by its president, Cuyler K. Sanborn, informs us that arrangements have been completed for the erection of an addition to its foundry at Haydenville, Mass., where its plant is located, that will increase its capacity in the production of plumbers' brass goods one hundred per cent. Mr. Sanborn states that this action is both a reflection of the patronage his company has received during the past year and the crystallization of his faith in future business conditions in the trade.

The Galard Company, of New York, has moved its offices from room 1305 to room 1202, 31 Union square,

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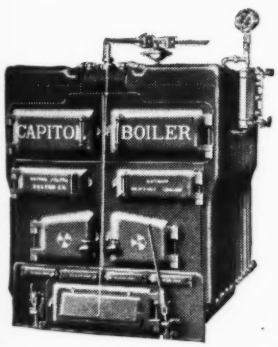

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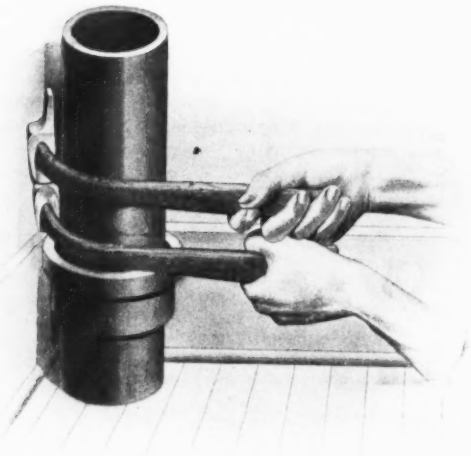
Sales Agencies:

NORFOLK & RICHMOND, VA., Virginia-Carolina Supply Co.
MINNEAPOLIS, MINN., Plumbing & S. F. Supplies Co.
ST. LOUIS, MO., L. M. Rumsey Manufacturing Co.
DENVER, COLO., Kellogg & Stokes Stove Co.

where it has fitted up commodious and attractive offices. The company has now completed its new factory in Newark, N. J., having 20,000 square feet of floor space, and has begun the production of a new type of one-piece compressed water closet seats and high and low down tanks, which are put out finished in white by the company's "Omala" process, which word has been adopted as the trade name under which they will be known. It is the company's intention to secure sales representatives in the principal jobbing centers east of Denver.

Mueller Combination Soil Pipe Calking Tools.

When a plumber finds a soil pipe placed in a corner or other inconvenient place and tries to calk it by the ordinary method, he has something of the feeling of the man who tries to swim with his hands tied. He can't get to the joint with straight tools or use a hammer with straight handle. The Mueller Mfg. Co., of Decatur, Ill., has patented tools which overcome the difficulty. With their use the task of calking a joint of soil pipe placed in a corner is as simple and easy



Mueller combination soil pipe calking tools.

as if the pipe were unobstructed in any way. These tools consist of a hammer and calking iron forged into one tool; likewise a hammer and yarning iron. They are made right and left. The handles of the tools are either hickory or steel, and are bent to conform to the shape of the pipe which acts as a guide and admits of a powerful blow being struck. Parties desiring fuller particulars can secure them on application mentioning "Domestic Engineering."

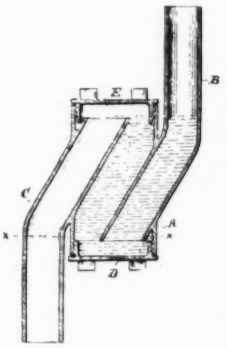
Weil Bros., of 129-133 West Lake street, Chicago, have made arrangements with the J. H. McLain Company, of Canton, Ohio, to handle its line of boilers in Chicago and vicinity, and will hereafter have these boilers on their showroom floor, so that their customers may inspect them at any time. They are also having a line of tank heaters made for them, which they will have on display. These latter will be made under the name of the Weil tank heater.

Patents

909,878. Valve for Gas-Burners. Frederick Egge, Bridgeport, Conn.

909,928. Seat-Actuated Flushing-Valve. Daniel W. McNeil, Cincinnati, O., assignor to The John Douglas Company, Cincinnati, O., a corporation of Ohio.

909,959. Pipe-Coupling. William H. Stoddard, Somerville, Mass.



909,871. Sewer-Gas Trap. Frank E. Cudell, Cleveland, O. The claim for this invention is as follows: "In a trap of the type as above referred to the combination with the cylinder A of an inlet pipe B and an outlet pipe C penetrating the sides of the cylinder in acute angular direction and terminating in close proximity of the top and bottom cap of said cylinder in the manner as shown and for the purpose described."

909,960. Valve. David M. Stott, Chicago, Ill., assignor of one-half to Horace E. Argo, Chicago, Ill.

909,961. Flushing Mechanism. Albert Succop, Pittsburg, Pa.

909,965. Flush-Tank for Water-Closets. Clifton E. Thompson, Holland, Mich.

909,989. Stop and Waste Valve. Dennis C. Charmois, Canton, O.

910,013. Plug-Valve. John E. Noesen, Chicago, Ill.

910,016. Hot-Water Heating Apparatus. Otto Oster, Wellston, Mo.

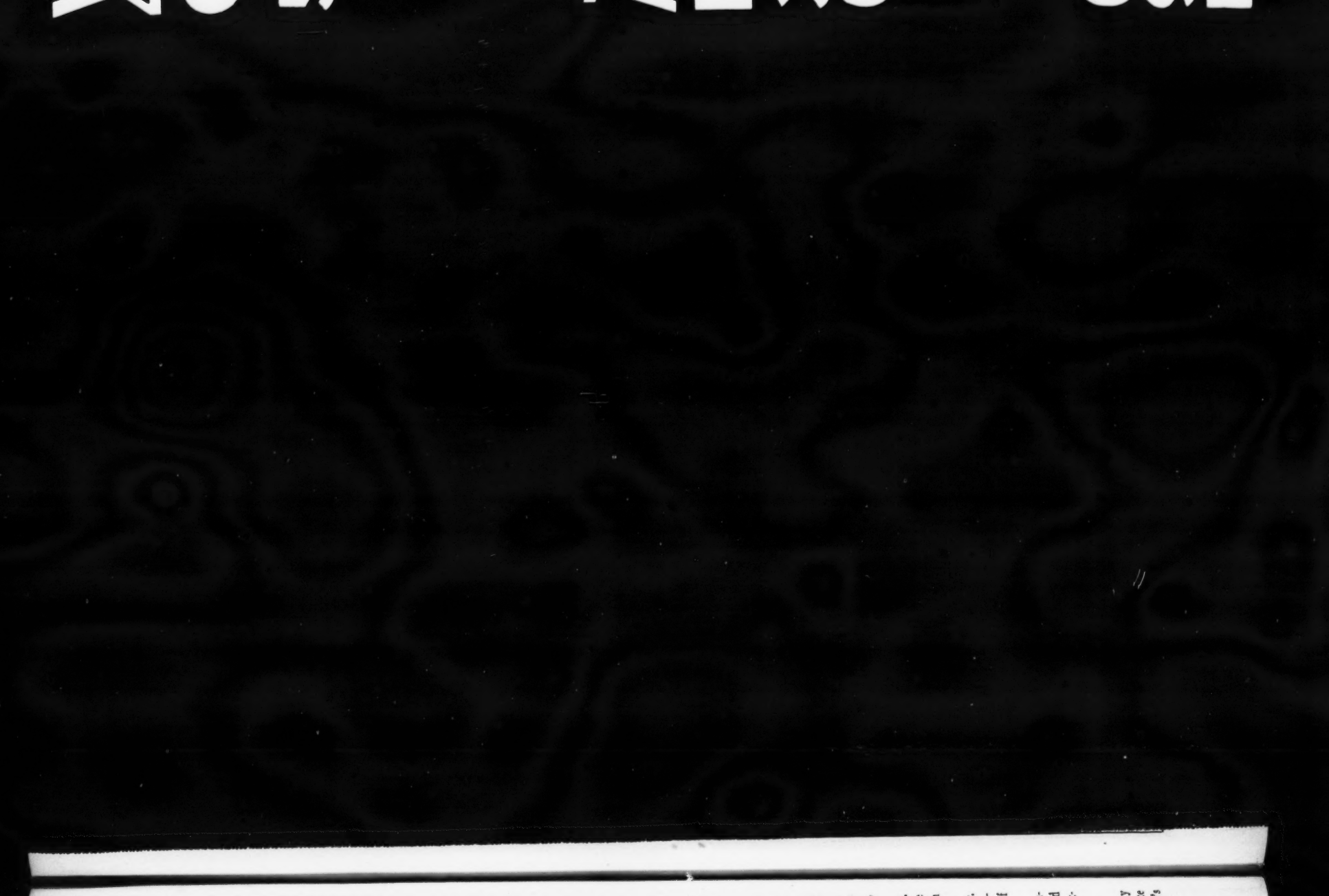
910,028. Molding-Machine. Willis C. Swift, Chappaqua, N. Y.

910,171. Ball-Cock. Fred Clark, New York, N. Y.

910,381. Bath-Cabinet. John Hermann, Saginaw, Mich.

910,401. Combined Throttle-Valve and Lubricator. Edmund H. Lunken, Denver, Colo., assignor to The Lunkenheimer Company, Cincinnati, O., a corporation of Ohio.

910,445. Combined Throttle-Valve and Lubricator. Jerome J. Aull, Cincinnati, O., assignor to The Lunkenheimer Company, Cincinnati, O., a corporation of Ohio.

910,475. Measuring-Faucet for Liquids. Frank Kenney, Portland, Ore., assignor of three-fourths to Fred Fritz and one-fourth to Per August Johnson, Portland, Ore.

Burlington, Ia.—Russell Sewage Disposal Company of this city has finished the installation of its up-to-date sewerless sewage disposal system at Edw. Crandall's handsome residence at Rushville, Ill.—Adv.